



APIC[®]

Association for Professionals in
Infection Control and Epidemiology

Curriculum Standards and Guidelines
for Certificate, Undergraduate, and
Graduate Programs in

INFECTION PREVENTION AND CONTROL

**APIC**Spreading knowledge.
Preventing infection.®

ACKNOWLEDGEMENTS

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INTRODUCTION

This curriculum guide is designed to assist educational partners who are developing and evaluating undergraduate, certificate, and graduate courses and programs in Infection Prevention and Control.

The Association for Professionals in Infection Control and Epidemiology (APIC) is the leading professional association for infection preventionists (IPs). IPs work to prevent healthcare-associated infections (HAIs) by isolating sources of infections and developing and implementing evidence-based practices to prevent and contain the spread of dangerous organisms. They practice across myriad healthcare settings including hospitals, outpatient clinics, long-term care, and ambulatory surgery centers. The importance of IPs was heavily underscored by the COVID-19 pandemic. Programs have responded to this urgent need for more trained IPs by expressing the need to add certificate, undergraduate, and/or graduate infection prevention and control (IPC) programs to their educational offerings.

To support the rising number of IPC and IPC-related programs, APIC began the work of creating guidelines for a clear pathway into IPC careers for college and university students. APIC created the IP Academic Pathway (IPAP) initiative, including an IPAP task force, as the driving force in designing programs that teach students what is needed for a career in IPC. The content in this guide supports the IPAP initiative by providing guideposts to programs interested in creating or revising a program and ensuring it is teaching the most critical and salient topics for students to have successful IPC careers. Therefore, this document provides an overview of the Curriculum Framework created through the IPAP initiative, explanations of instructional pedagogy, and a curriculum design for each competency in the framework, including example applications of a variety of learning objectives and strategies

We encourage educational programs who align their programs with the Curriculum Framework to consider submitting an application to receive APIC's acknowledgement of alignment.

OCCUPATIONAL OUTLOOK

According to the U.S. Bureau of Labor Statistics (BLS), the employment of epidemiologists, who play a key role in IPC, is projected to grow five percent from 2019 to 2029, which is faster than the average across all occupations. This growth is attributed to the increasing need for public health professionals to respond to emerging infectious diseases and other public health threats.

As the demand for public health professionals continues to rise, a significant number of jobs are expected to be created in IPC through 2030.

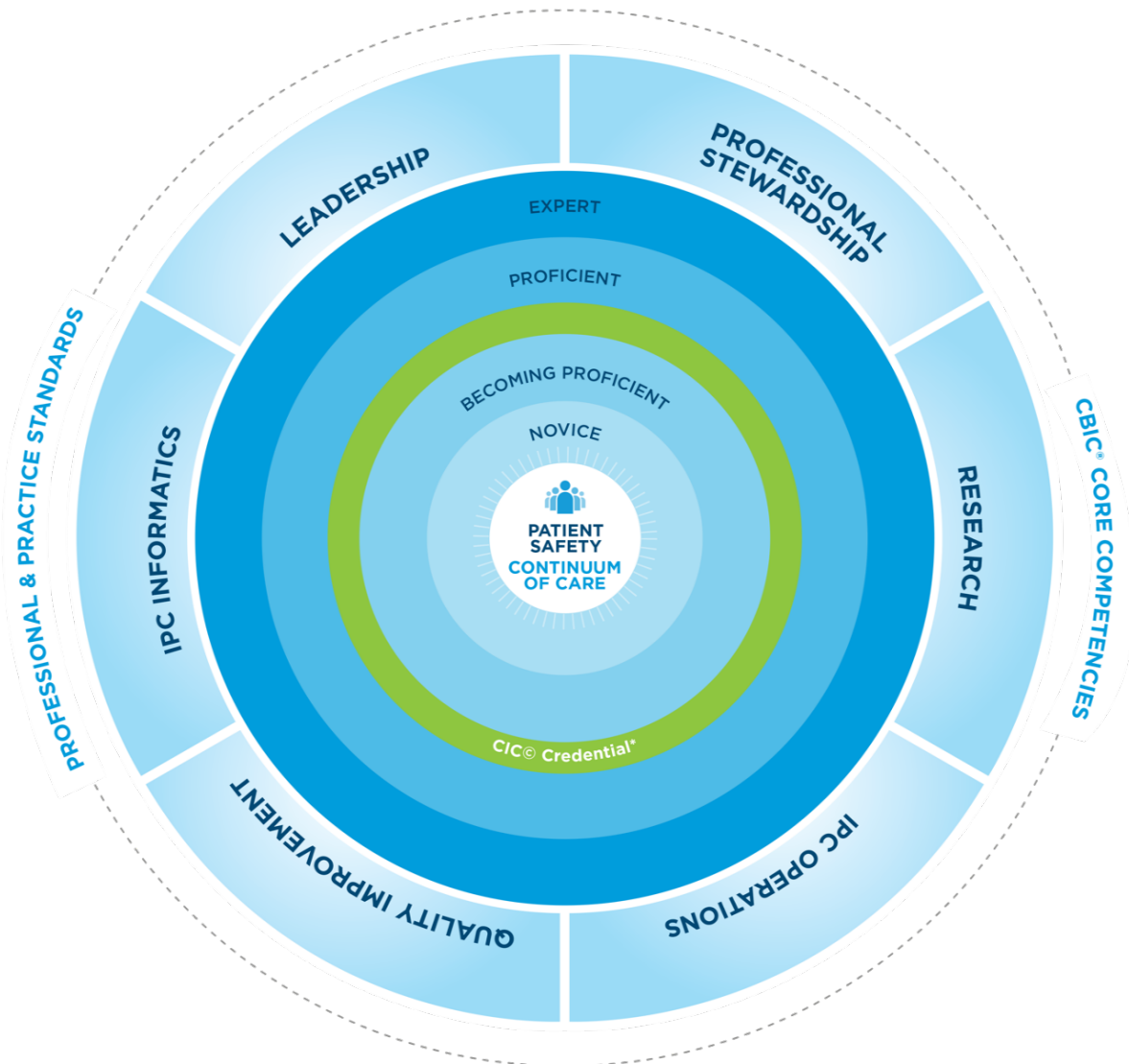
According to the BLS, the median annual wage for epidemiologists, including those specializing in IPC, was \$74,560 in May 2020. The salary range can vary depending on factors such as education, certifications, experience, geographic location, the employing organization, and the specific responsibilities of the role. Professionals in leadership positions or those with advanced degrees may earn higher salaries.

IP ACADEMIC PATHWAY (IPAP)

Infection Preventionist Competency Model

A key component of the IP Academic Pathway (IPAP) initiative is **APIC's Infection Preventionist Competency Model**. A clear pipeline for new IPs into the profession includes undergraduate, certificate, and graduate degree programs that are centered around the six domains of the model, listed below. Aspects of this foundational model can be seen throughout this document, as it informs the APIC Curriculum Framework and the learning objectives that flow from it.

- | | |
|--------------------------|------------------------------|
| I. IPC Operations | IV. Leadership |
| II. Informatics | V. Research |
| III. Quality Improvement | VI. Professional Stewardship |



APIC Curriculum Framework

A central charge of the IPAP was to develop and validate a Curriculum Framework. To accomplish this, the IPAP task force developed a list of IPC competencies and content areas derived from the competency model. A partner then developed and administered two large-scale academic pathway surveys. Using these surveys, APIC invited members of the IPC academic and professional communities to provide their thoughts on the initial list, such as rate how important it was for recent IPC program graduates to be knowledgeable in the various competencies and content areas. Analysis of the resulting data, plus focus groups with the IPAP task force, led to the development of a validated list of technical and behavioral competencies that are important for students in IPC programs (i.e., undergraduate, certificate, and graduate) to learn. The definitions of these competencies are provided below, with more detail about the content areas within each included in the Curriculum Design section.

Ten Required Technical Competencies

There are 10 technical competencies expected to be taught in all IPC programs. These competencies were originally sourced from the APIC competency model. In some cases, they have been combined for ease of application due to the likeliness of being taught together.

Technical Competency	Definition
<u>1. Basics of Infectious Disease</u>	is defined as the basic concepts associated with infectious diseases (ID). This topic includes illnesses caused by germs (e.g., bacteria, viruses, fungi) that enter the body, multiply, and can cause an infection. Content includes modalities of infectious disease transmission, healthcare associated infections, immunization, and key pathogens in infectious diseases.
<u>2. Cleaning, Disinfection, and Sterilization</u>	is defined as the concepts of cleaning, disinfection, and sterilization across various levels and settings within the healthcare environment. Content includes regulatory requirements and resources, environmental cleaning and disinfection programs, high level disinfection, and sterilization principles and types.
<u>3. Principles of Applied Epidemiology and Surveillance</u>	is defined as the foundational topics of infectious disease surveillance, including outbreak investigations, epidemiological methodologies, measurements, and plan design.
<u>4. Quality and Safety</u>	Includes four areas of (1) Quality and Safety, (2) Performance Improvement, (3) Risk Assessment and Management, and (4) Health Equity.
<u>Quality and Safety</u>	is defined as foundational concepts of high reliability and systems thinking as well as key quality and accrediting organizations. Content includes adverse event reporting, healthcare worker safety, quality metrics, and reporting requirements.

Technical Competency	Definition
<u>Performance Improvement</u>	is defined as the basic concepts of performance improvement, including key methodologies and integration into program planning, implementation science, communicating and presenting data effectively, and internal benchmarking.
<u>Risk Assessment and Management</u>	is defined as the basic concepts of the identification, assessment, and mitigation of infectious disease related risk.
<u>Health Equity</u>	is defined as the health status and outcomes within a group of people. Content includes telehealth, community-based IPC programs, social determinants of health, health equity and disparities, and vaccine hesitancy.
<u>5. IPC Practice and Operations</u>	is defined as the foundational topics of infection prevention practice and operations, including competencies and responsibilities of IPC, infection types and mitigation strategies, key advisory resources, and education.
<u>6. Data Management</u>	is defined as the analysis and management of applicable data required to create actionable interventions. Content includes benchmarking, data collection and mining, data visualization, surveillance systems, and use of technology tools (e.g., Electronic medical records [EMR]).
<u>7. Microbiology, Antimicrobial Stewardship, and Laboratory Methods</u>	Includes two areas of (1) Microbiology and Laboratory Methods and (2) Antimicrobial Stewardship.
<u>Microbiology and Laboratory Methods</u>	is defined as laboratory methods relevant to the infection preventionist. This includes basic concepts of microorganisms that cause disease or infection in humans (e.g., bacteria, viruses, fungi, parasites), the laboratory techniques utilized to identify them, as well as appropriate use of these tests.
<u>Antimicrobial Stewardship</u>	is defined as practices dedicated to improving and optimizing antimicrobial use while minimizing harm and antimicrobial resistance. Content includes history and development of antimicrobials, use of antibiograms, and surveillance.
<u>8. Environment of Care</u>	is defined as the environment and environmental factors in which patient care is provided, with a focus on providing a safe, functional, and effective space. Includes IPC content related to construction and renovation, equipment, facility design and infrastructure, utilities and maintenance, and emergency management for air, water, and waste.
<u>9. Research Design and Evaluation</u>	Includes two areas of (1) Basics of Research Design and (2) Critical Evaluation of Research.
<u>Basics of Research Design</u>	is defined as understanding key elements of research such as types of study design, assessment and survey design, authorship guidelines, research collaboration, statistical methodologies used in research, understanding research funding, and ethics and responsible conduct of research.

Technical Competency	Definition
<u>Critical Evaluation of Research</u>	is defined as the essential concepts on how to evaluate research including interpreting complex statistical methodologies, analyzing study design, and literature review.
10. Behavioral Science	Included two areas of (1) Behavioral Science and (2) Implementation and Dissemination Science.
<u>Behavioral Science</u>	is defined as covering the topics of change management and health behavior theories.
<u>Implementation and Dissemination Science</u>	is defined as understanding key elements of implementation and dissemination science including dissemination and implementation models in health research and practice; designing, implementing, and evaluating quality improvement (QI) initiatives; developing metrics for QI; translating and using evidence-based practice and research; and approaches to disseminating research.

Eleven Required Behavioral Competencies

There are 11 behavioral competencies that encompass knowledge, skills, and abilities (KSAs) in non-technical areas that are expected to be embedded in the content of multiple courses in each program. In comparison to the technical competencies, these 11 areas are less likely to have a course dedicated to them. Instead, they will likely be integrated into various lectures and assignments across courses.

Behavioral Competency	Definition
<u>1. Accountability</u>	is defined as ensuring the quality and completion of work tasks and taking ownership over processes.
<u>2. Advocacy</u>	is defined as the understanding of advocating for IPC programs, regulatory and legislative advocacy (state, local, regional, and national), and types of advocacy. It also encompasses advocating for one's own professional needs, rights, and interests.
<u>3. Analytical Skills</u>	is defined as collecting, analyzing, interpreting, and presenting data or other information to accomplish research goals and find solutions to problems.
<u>4. Business Acumen</u>	is defined as basic concepts of budgeting, how to read and understand financial statements, understanding key financial performance indicators, and conducting cost-benefit analyses. It also involves understanding how businesses and systems operate to support the development of business cases for products, staffing, or other resources to prevent infections.

Behavioral Competency	Definition
<u>5. Collaboration/ Consultation</u>	<p>“Collaboration” is defined as working effectively in groups (i.e., teamwork) to reach shared goals and knowing when to and proactively seeking information from interdisciplinary team members to solve problems.</p> <p>“Consultation” is defined as a collaborative process where an expert provides specialized knowledge, insights, and advice to address specific challenges, make informed decisions, or increase understanding of a particular topic. This process often involves assessing needs, offering recommendations, and sharing best practices to achieve desired outcomes.</p>
<u>6. Diversity, Equity, and Inclusion</u>	<p>is defined as acknowledging and recognizing individual differences and the impact on individual experiences and perspectives. Respecting and welcoming the variety of perspectives these differences can bring to various situations.</p>
<u>7. Ethics</u>	<p>is defined as ethics and behavioral science, ethical challenges within IPC, and professional codes of conduct (e.g., APIC practice standards).</p>
<u>8. Global Perspective/Mindset</u>	<p>is defined as an understanding of various cultures and how those cultures relate and interact with each other. The understanding of how situations impact and are impacted by viewpoints and actions from societies around the world.</p>
<u>9. Leadership</u>	<p>is defined as strategic planning management and leadership roles and responsibilities. Content includes accountability performance measures, developing and evaluating policies, and high-reliability organizations (HRO). Leadership is also the ability to guide, inspire, influence and motivate others toward a shared vision or goal and involves setting direction, building trust, and empowering team members to perform at their best.</p>
<u>10. Problem Solving</u>	<p>is defined as identifying problems and reviewing related information to develop and evaluate options and implement solutions. Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.</p>
<u>11. Relationship Management</u>	<p>is defined as building, maintaining, and strengthening positive, productive interactions with others and includes coaching, mentoring, communication, collaboration, and critical thinking. Additional content entails active listening, conflict resolution, communication strategies, emotional intelligence, team dynamics, conflict management, consultation, cognitive bias, negotiation skills and effective decision-making.</p>

INSTRUCTIONAL PEDAGOGY

Instructional pedagogy refers to the theory, practice, and strategies involved in the art and science of teaching. It encompasses the methods, techniques, and approaches educators use to facilitate learning and enhance students' understanding of subject matter. Instructional pedagogy includes selecting appropriate teaching methods, designing learning experiences, creating learning objectives, implementing instructional materials, and assessing student progress. Effective instructional pedagogy optimizes learning outcomes by engaging students, promoting critical thinking, and fostering a supportive and enriching educational environment.

The instructional pedagogy outlined in this guide is intended to help educators design and revise course content to teach the competencies within the framework. To do this, it draws upon the insights of:

- The Bloom's Taxonomy framework
- Active Learning Theories
- The Pyramid for Learning

Bloom's Taxonomy

Bloom's Taxonomy is a hierarchical model that classifies educational objectives into cognitive levels, providing educators with a structured approach to lesson planning and assessment. Developed by Benjamin Bloom, an educational psychologist, in collaboration with a committee of educators, the original taxonomy was first published in 1956 as part of the Handbook I: Cognitive Domain.

By incorporating Bloom's Taxonomy, educators can design learning objectives that target different levels of cognitive skills, resulting in a more comprehensive and structured approach. This framework allows educators to set clear learning objectives, design assessments that align with cognitive levels, and create instructional activities that promote higher-order thinking skills such as analysis, evaluation, and creation.

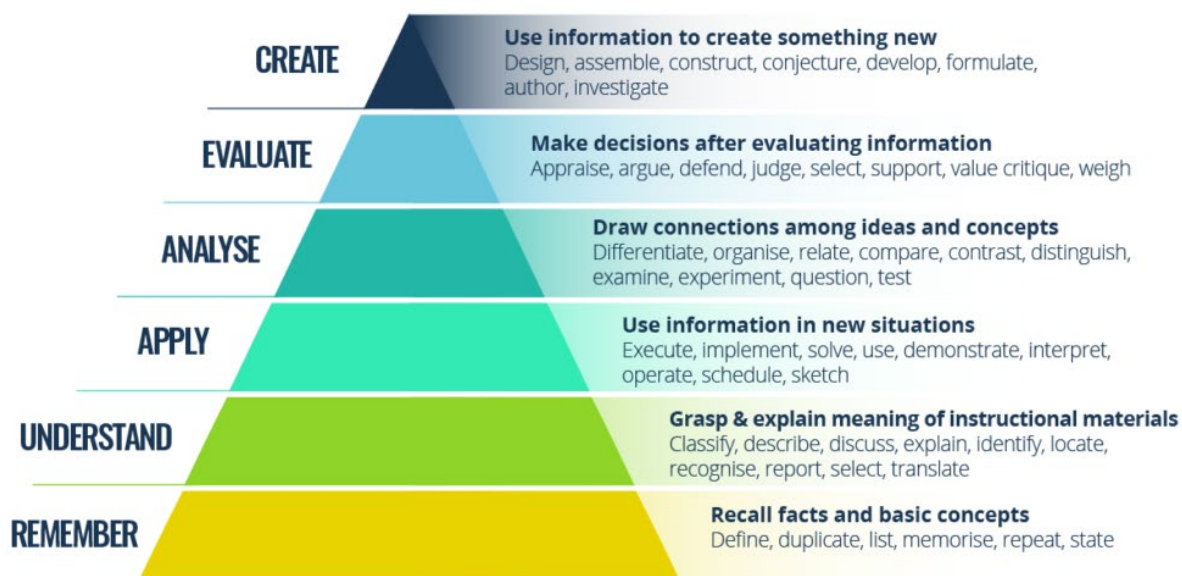
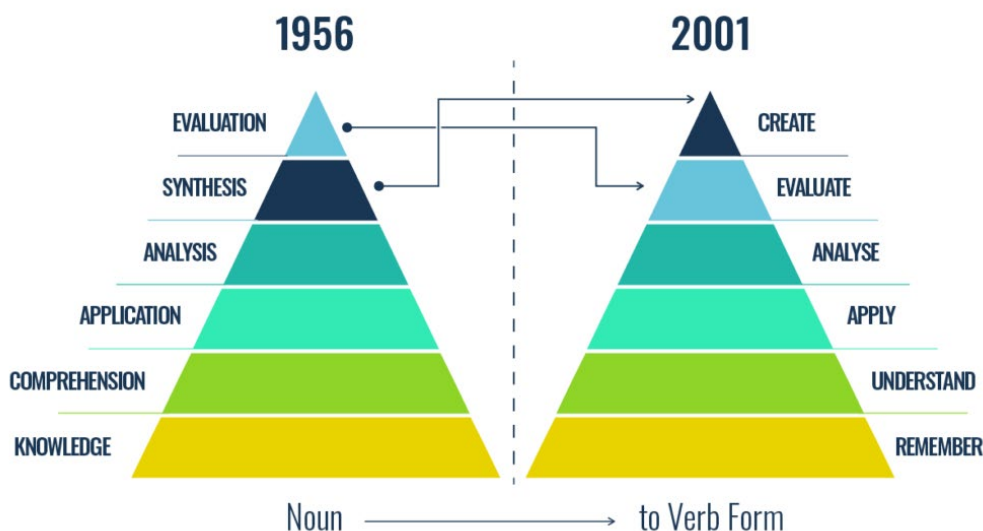
In undergraduate-level programs, Bloom's Taxonomy is often used to guide the development of learning objectives and assessments that focus on foundational knowledge and understanding. Students are exposed to activities that target lower-order thinking skills, including remembering and understanding concepts. As students progress through their undergraduate programs, they engage in activities that require higher-order thinking skills, such as applying, analyzing, and evaluating information.

At the certificate and graduate level, applications of Bloom's Taxonomy typically challenges students to engage in more complex cognitive tasks. Graduate programs oftentimes emphasize critical thinking, problem-solving, analysis, evaluation, and the creation of new knowledge. Activities and assessments at this level encourage students to demonstrate a deeper understanding of the subject matter and apply theoretical concepts in practical contexts.

Over the years, Bloom's Taxonomy has evolved to include different domains and has undergone vital updates. The most recent version, often called *The Revised Taxonomy*,

was modified by psychologists David Krathwohl and Lorin Anderson in 2001. Titled *A Taxonomy for Teaching, Learning, and Assessment: A Revision of Bloom's Taxonomy of Educational Objectives*, this version focuses on a dynamic approach to education. Recognizing that educational objectives should not be confined to fixed, unchanging spaces, the revised framework reflects a more active learning model.

The original model described the six main categories using nouns: Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation. However, the updated framework replaces these nouns with verbs, acknowledging that learning is an active process. Additionally, according to the revised Bloom's Taxonomy, the newer framework assigns greater importance to creating and representing the highest-level learners can achieve.



(Cloe, Harry. "Bloom's Taxonomy: Master Your Learning Objectives" 2022)

Active Learning Theories

Active learning has developed over time through the work of various educational theorists and researchers who have emphasized the value of student engagement, participation, and hands-on experiences in the learning process. This methodology stands in opposition to traditional didactic teaching approaches where students passively receive information. Active learning, in contrast, promotes student interaction with the subject matter through problem solving, peer collaboration, and reflection on their own learning process.

Active learning strategies promote inclusivity in college classrooms by engaging all students in the learning process, acknowledging and leveraging the diversity of learners' experiences, and creating a collaborative environment where multiple perspectives are valued. These strategies can include group work, peer teaching, problem-based learning, and interactive lectures. By implementing active learning techniques, instructors encourage participation from all students, catering to various learning styles and abilities and thus fostering an inclusive educational environment.

Prominent theorists who have influenced active learning include **John Dewey**, **Jean Piaget**, and **Lev Vygotsky**. According to constructivist learning theory, learners actively form their knowledge and comprehension of the world by engaging in experiences, interactions, and thoughtful reflections.

- **Dewey's** educational philosophy was centered on the learner. It promoted environments that stimulate active engagement, critical thinking, and reflection by helping the learner connect education with their lived experiences.
- **Piaget's** work emphasized the importance of active engagement in the learning process and highlighted how interactions with the environment are critical to cognitive development. Piaget's ideas have underscored the significance of designing learning experiences that support learners' developmental stages and encourage active participation, exploration, and discovery.
- **Vygotsky's** work continued to contribute to constructivist learning theory, most noted for his work on the practice of scaffolding, where learners are provided support that is gradually removed as they become more confident. Vygotsky believed that learning is inherently a social process and that knowledge is constructed through interactions with others.

Active learning strategies shift the focus from teacher-centered delivery to student-centered discovery. These classrooms, characterized by engaging, participatory learning experiences, offer numerous benefits to students across various educational settings. These benefits include improved academic performance, enhanced critical thinking and problem-solving skills, increased student motivation and engagement, and stronger retention of information.

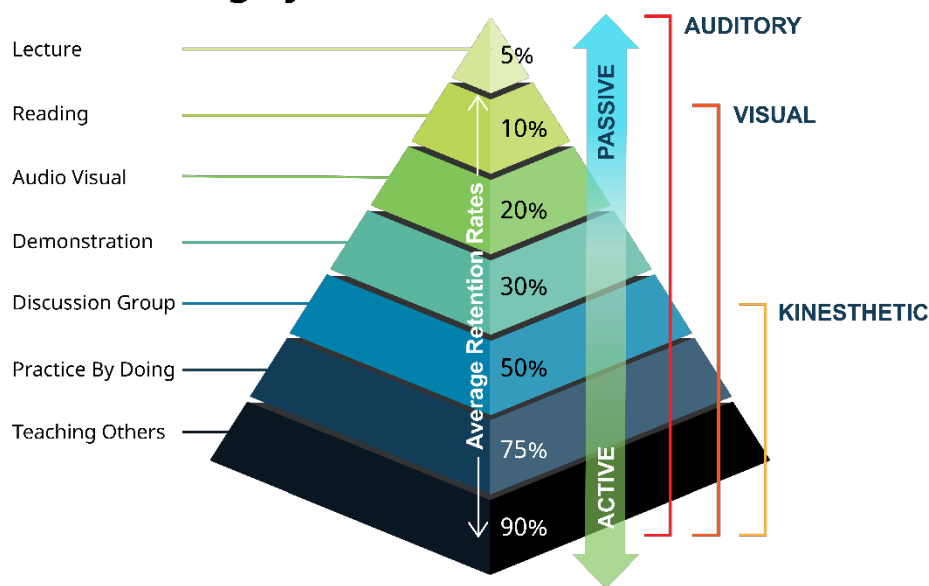
The Learning Pyramid

The Learning Pyramid developed by the **National Training Laboratory (NTL)** is a visual representation that illustrates the effectiveness of various learning methods

regarding retention rates. According to the pyramid, learners retain different percentages of information based on how they are exposed to that information. The pyramid suggests that learners retain 90% of the information when they teach others, 75% when they practice what they learned, 50% when they engage in group discussions, 30% when they see a demonstration, 20% when they watch audiovisuals, 10% when they read, and only 5% when they learn through lecture.

By considering the Learning Pyramid, educators can incorporate various learning methods into their instruction to cater to diverse learning preferences and enhance the long-term retention of knowledge. The figure below illustrates the learning pyramid and three commonly described learning styles: auditory, visual, and kinesthetic.

The Learning Pyramid



According to theory, auditory learners prefer to learn through listening. Visual learners learn best through visual aids, videos, and diagrams. Kinesthetic learners learn through hands-on experiences, role-playing, and using manipulatives. In general, effective teaching strategies incorporate a variety of learning activities to cater to different learning styles and engage learners with diverse preferences.

Incorporating Bloom's Taxonomy, the Learning Pyramid, and active learning strategies into IPC courses can greatly enhance students' learning experiences. Active learning is an instructional approach that involves students actively participating in the learning process, promoting deeper understanding, retention of information, and the development of essential skills. Some benefits of active learning in IPC courses include increased engagement, improved understanding, enhanced critical thinking skills, better retention of information, and the development of essential skills such as communication, collaboration, and problem-solving.

The following section provides an explanation of several popular active learning strategies to support their integration into IPC program courses.

Active Learning Strategies

Case Studies

According to educational theory, incorporating case studies in active learning helps to bridge the gap between theoretical knowledge and practical application. Case studies offer students a glimpse into actual issues and challenges that individuals, organizations, or communities face, promoting critical thinking and problem-solving skills.

Collaborative Learning

The essence of collaborative learning lies in its emphasis on group interaction and the collective pursuit of knowledge. It shifts the traditional classroom dynamic from a teacher-centered to a student-centered format, allowing students to take on more responsibility for their own learning and that of their peers. This approach aids in developing critical thinking and problem-solving skills, fosters a sense of community, and improves communication abilities among learners. Scholars suggest that collaborative learning enhances the educational experience by harnessing all group members' diverse strengths and viewpoints. As students work together, they are exposed to different interpretations and approaches to problem solving while enabling a deeper and more nuanced understanding of the subject matter. Moreover, this method encourages the development of interpersonal skills, such as empathy and conflict resolution, which are invaluable in both academic and applied settings.

Cooperative Learning

Cooperative learning is an instructional approach where students work together in small groups to achieve a common goal or complete a specific task. Students are typically assigned specific roles within their groups. Each member has individual responsibilities that contribute to the group's overall success. Assessment in cooperative learning may include individual accountability, where each student's performance is evaluated based on their contribution to the group task.

Experiential Learning

Experiential learning is an educational approach that emphasizes learning through direct experience and reflection on that experience. It involves active engagement in realistic experiences, situations, or activities, allowing learners to apply theoretical knowledge to practical contexts. Experiential learning is often cyclical, involving concrete experiences, reflective observation, abstract conceptualization, and active experimentation, leading to deeper understanding and skill development.

Flipped Classroom

The flipped classroom is an instructional model in which traditional teaching methods are reversed or "flipped." In this approach, students engage with instructional content outside of class, typically through pre-recorded lectures, readings, or online materials. Class time is then dedicated to interactive, collaborative activities, discussions, problem-solving exercises, or practical applications of the learned material.

Gallery Walks

A gallery walk is an instructional strategy where students move around the classroom or a designated space to view and engage with visual displays or exhibits that showcase

various content related to a specific topic or theme. These displays may include posters, artwork, diagrams, written explanations, photographs, or any other visual representations of information. Students typically circulate the room individually or in small groups during a gallery walk, observing and analyzing the displayed materials. They may take notes, respond to prompts or questions posted alongside the exhibits, engage in discussions with peers, and make connections between different pieces of information. Gallery walks encourage active participation, visual learning, and critical thinking as students interact with diverse content in a dynamic and visually stimulating environment.

Inquiry-based Learning

Inquiry-based learning centers around students actively exploring and investigating questions, problems, or scenarios to develop deeper understanding, critical thinking skills, and knowledge acquisition. This method emphasizes curiosity, discovery, and problem-solving as students engage in the process of asking questions, conducting research, and drawing conclusions through hands-on experiences and investigations.

Interactive Lectures with Technology

Interactive lectures with technology involve utilizing digital tools, applications, or platforms to enhance traditional lecture delivery and engage students actively during the learning process. By incorporating interactive elements such as quizzes, polls, simulations, digital whiteboards, chat features, and multimedia content, instructors can create more dynamic and participatory learning experiences for students. These interactive technologies enable students to respond to questions, provide feedback, collaborate with peers, solve problems in real time, and interact with the lecture content in a more immersive and personalized manner. Educators can promote student engagement, motivation, and a deeper understanding of the material by integrating technology into lectures through active participation and instant feedback mechanisms.

Jigsaw

The jigsaw technique is a cooperative learning strategy in which students work together in small groups to master specific content and then come together in new groups to teach their assigned content to their peers. Each group member becomes an "expert" in a particular topic or area and is responsible for teaching that information to the rest of the group. This method fosters collaboration, communication, and active student engagement, promoting deeper understanding and knowledge retention through peer teaching.

Peer Instruction

In peer instruction, instructors pose conceptual questions to the class and students discuss these questions in small groups. Through peer discussions, students explain their reasoning, challenge each other's ideas, and work together to reach a consensus on the correct answer. Peer instruction aims to promote a deeper understanding of complex concepts, critical thinking skills, and collaborative learning among students.

Problem-based Learning

Problem-based learning is an educational approach that centers around students solving complex, simulated problems independently or collaboratively. It involves presenting students with authentic, open-ended problems that require critical thinking, analysis, research, and problem-solving skills to reach solutions. Problem-based

learning shifts the focus from rote memorization to applying knowledge in practical contexts, helping students develop higher-order thinking skills, communication, and team collaboration abilities.

Project-based Learning

Project-based learning is an instructional approach in which students work on an extended project that engages them in solving applied problems or answering complex questions. Students apply knowledge and skills to explore authentic challenges, conduct research, collaborate with peers, and produce tangible outcomes such as presentations and reports or build creative solutions.

Role-Play Simulations

Role-play simulations are educational activities in which participants assume specific roles or characters to engage in structured interactions that simulate realistic scenarios or events. This experiential learning method allows participants to gain practical experience, problem-solving skills, and empathy by immersing themselves in different perspectives and situations.

Service Learning

Service learning combines community service with academic instruction, encouraging students to apply what they learn in the classroom to real issues within their community. This hands-on approach allows students to engage in meaningful service activities with non-profits or community organizations while reflecting on their experiences, deepening their understanding of course content, and developing a sense of civic responsibility and social awareness.

Simulation Scenarios

Simulation scenarios involve creating realistic situations or environments that allow individuals to experience and respond to different challenges or tasks within a controlled setting. These scenarios are used in healthcare to provide hands-on learning experiences, test decision-making skills, and enhance critical thinking abilities.

Socratic Method

The Socratic method is a form of cooperative argumentative dialogue between individuals based on asking and answering questions to stimulate critical thinking, draw out ideas, and illuminate underlying assumptions. Popularized by the ancient Greek philosopher Socrates, it emphasizes the exploration of complex concepts through careful questioning, discussion, and examination of logic and beliefs.

Think-Pair-Share

Think-Pair-Share is a cooperative learning strategy in which students think individually about a question or topic, pair up with a partner to discuss their thoughts, and finally share their ideas with the whole class. This technique promotes active participation, critical thinking, and collaboration among students by providing opportunities for individual reflection, peer interaction, and group sharing of ideas.

CURRICULUM DESIGN

Curriculum design involves setting learning objectives and implementing strategies to achieve said objectives. The IPC curriculum design outlined in this section features learning objectives based on the Curriculum Framework and application of Bloom's Taxonomy. The complementary instructional strategies draw on active learning theories and approaches to help programs create courses and assignments that engage students through a variety of methods. Given the Curriculum Framework was validated and therefore applicable to IPC programs at three levels, the curriculum provides suggestions for teaching each competency across the three education program types included in the following table.

Program Level	Description	
Undergraduate	Time Frame	4 years
	Credit Hours	Minimum of 120 credit hours* *This includes a combination of core courses, electives, and general education requirements over four years of full-time study.
	Type of Program	Program that culminates in an undergraduate degree.
	Intended Audience	The undergraduate degree is intended for individuals who are interested in starting a career in a health-related field and/or those who are already working in a health-related field and want to specialize in or enhance their knowledge in the field of Infection Prevention and Control and Epidemiology.
	Examples of Alternate Program Names	Bachelor's Level Programs, First Degree Programs, Foundational Studies, Initial Degree Programs
Certificate	Time Frame	9 – 12 months
	Credit Hours	Minimum of 12 credit hours
	Type of Program	Program that culminates in a certificate rather than a degree.
	Intended Audience	The certificate program is intended for individuals in a health-related field seeking advanced knowledge and skills in the field of Infection Prevention and Control and Epidemiology.
	Examples of Alternate Program Names	Professional Certification, Specialized Training Program, Qualification Program, Accredited Certificate Program, Post-Baccalaureate Certificate, Graduate Certificate
Graduate	Time Frame	24 months
	Credit Hours	Minimum of 36 credit hours; 48 credit hours is highly recommended
	Type of Program	Program that culminates in a graduate degree specific to the discipline of infection prevention and epidemiology.

Program Level	Description	
Graduate (Cont.)	Intended Audience	The graduate degree is intended for individuals who are bachelor's-prepared in a health-related field who are pursuing careers in the field of Infection Prevention and Control and Epidemiology.
	Examples of Alternate Program Names	Postgraduate, Advanced Studies, Master's Level Programs, Higher Degree Programs

The curriculum design is structured by competency. It first lists an APIC Curriculum Framework competency and its definition. The technical competencies are then followed by examples of topics for each competency to be included in each program level. Then, it lists learning objectives written at three program levels, using concepts from the Bloom's Taxonomy framework. Each competency section concludes with examples of instructional strategies that could be used to achieve the necessary objectives.

Technical Competency 1: Basics of Infectious Disease is defined as the basic concepts associated with infectious diseases (ID). This topic includes illnesses caused by germs (e.g., bacteria, viruses, fungi) that enter the body, multiply, and can cause an infection. Content includes modalities of infectious disease transmission, healthcare associated infections, immunization, and key pathogens in infectious diseases.

The check marks in the table below indicate examples of the content expected to be included in this competency for each program level.

Topic		Basics of Infectious Disease		
Content	Sub-content	Undergraduate	Certificate	Graduate
General Content	Introduction to Infectious Disease (ID)	✓	✓	✓
	Modalities of ID transmission (i.e., chain of infection, infectious disease triangle)	✓	✓	✓
	Principles of communicable disease transmission	✓	✓	✓
Key Hospital-Acquired Infection (HAI) Categories	Hospital Acquired Pneumonia	✓		✓
	Device related or associated infections e.g., Ventilator Associated Pneumonia, Vascular access device associated infections, Catheter Associated Urinary Tract Infections	✓	✓	✓
	Surgical Site Infections	✓	✓	✓
	Clostridioides difficile infections	✓	✓	✓
	Multi-drug Resistant Organisms	✓	✓	✓
	Emerging infectious diseases	✓	✓	✓
Key Pathogens in Healthcare	Viral hemorrhagic fevers (VHF) e.g., Ebola, Marburg	✓	✓	✓
	HIV	✓		✓
	Hepatitis	✓		✓
	Influenza	✓	✓	✓
	Creutzfeldt Jakob Disease	✓	✓	✓
	Tuberculosis	✓	✓	✓

Learning Objectives: Basics of Infectious Disease – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of infectious diseases and their essential characteristics.
- Identify the different modalities of infectious disease transmission.
- Explain the concept of healthcare-associated infections and their prevention.
- Describe the importance of immunization in preventing infectious diseases.
- Identify key pathogens associated with common infectious diseases.

2. Comprehension:

- Summarize the fundamental principles and components of infectious disease transmission.
- Compare and contrast different approaches to preventing healthcare-associated infections.
- Interpret the impact of immunization on the prevention of infectious diseases.
- Analyze the characteristics and virulence of critical pathogens in infectious diseases.

3. Application:

- Apply knowledge of infectious disease transmission to real-life scenarios.
- Analyze the effectiveness of preventive measures for healthcare-associated infections.
- Develop strategies to promote immunization and prevent infectious diseases.
- Identify key pathogens in infectious diseases and propose appropriate control measures.

Learning Objectives: Basics of Infectious Disease – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of different modalities of infectious disease transmission.
- Assess the impact of healthcare-associated infections on patient outcomes and healthcare costs.
- Analyze the effectiveness of immunization programs in preventing infectious diseases.
- Evaluate the characteristics and virulence factors of critical pathogens in infectious diseases.

2. Synthesis:

- Propose improvements to existing preventive measures for healthcare-associated infections.
- Design a comprehensive immunization program tailored to a specific population.
- Create a plan for implementing and monitoring control measures for critical pathogens in infectious diseases.
- Develop strategies to address the challenges and limitations of infectious disease control.

3. Evaluation:

- Critically evaluate the effectiveness of different modalities of infectious disease transmission in various settings.
- Assess the impact of healthcare-associated infections on healthcare organizations and public health.
- Evaluate the effectiveness of immunization programs in reducing the burden of infectious diseases.
- Justify the importance of ongoing evaluation and refinement of control measures for key pathogens in infectious diseases.

Learning Objectives: Basics of Infectious Disease – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of infectious disease transmission.
- Evaluate the effectiveness of different preventive measures for healthcare-associated infections.
- Assess the limitations and challenges of immunization programs in preventing infectious diseases.
- Analyze the factors influencing the emergence and spread of key pathogens in infectious diseases.

2. Synthesis:

- Integrate various theoretical perspectives on infectious disease transmission to develop a comprehensive framework.
- Design a research study to investigate the effectiveness of preventive measures for healthcare-associated infections.
- Develop innovative strategies to overcome barriers to immunization programs to prevent infectious diseases.
- Create a theoretical model that incorporates the control of key pathogens as a central component of infectious disease management.

3. Creation:

- Design a comprehensive infectious disease control program for a healthcare organization.
- Contribute to advancing knowledge in the field by publishing research on preventing and controlling healthcare-associated infections.
- Develop innovative strategies to address the challenges of emerging and drug-resistant pathogens in infectious diseases.

Instructional Strategies: Basics of Infectious Disease

Case Studies: Provide students with real-life scenarios or case studies related to infectious disease transmission, healthcare-associated infections, immunization, and key pathogens. Ask them to analyze the cases and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of infectious diseases.

Cooperative Learning: Divide students into small groups and assign them different topics related to infectious diseases. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the understanding of infectious disease concepts.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to infectious diseases. For example, organize field visits to healthcare settings to observe infection control practices or facilitate immunization campaigns. This allows students to apply theoretical knowledge practically and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on infectious diseases for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or simulations, where students can apply and reinforce their understanding of infectious disease concepts.

Inquiry-Based Learning: Encourage students to explore specific topics related to infectious diseases through self-directed inquiry. Provide resources and guidance for students to conduct research, formulate research questions, and develop evidence-based strategies. This strategy fosters curiosity, critical thinking, and independent learning in infectious diseases.

Interactive Lectures with Technology: Use tools like polling software or online discussion boards to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of infectious disease concepts in real-time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of infectious diseases. Ask each group to become an expert in their assigned aspect and then reassemble the groups to share their knowledge. This strategy promotes

collaboration, knowledge sharing, and a deeper understanding of infectious disease concepts.

Peer Instruction: Incorporate peer-to-peer teaching and learning in infectious diseases. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of infectious disease knowledge. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a research project or intervention project related to infectious diseases. Ask them to develop a research proposal or intervention plan, including data collection methods, analysis techniques, and implementation strategies. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying infectious disease knowledge in real-life situations. For example, simulate a healthcare setting where students identify and control the spread of infections. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of infectious diseases.

Service Learning: Engage students in service-learning projects that require the application of infectious disease knowledge. Encourage students to apply their knowledge and skills to address current infectious disease challenges in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience applying infectious disease knowledge. For example, simulate an outbreak scenario where students analyze data, make decisions, and implement control measures. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Use a dialogue-based approach to teaching infectious disease concepts. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different aspects of infectious diseases. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to infectious diseases and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on infectious diseases.

Technical Competency 2: Cleaning, Disinfection, and Sterilization is defined as the concepts of cleaning, disinfection, and sterilization across various levels and settings within the healthcare environment. Content includes regulatory requirements and resources, environmental cleaning and disinfection programs, high level disinfection, and sterilization principles and types.

The check marks in the table below indicate examples of the content expected to be included in this competency for each program level.

Topic Cleaning, Disinfection, and Sterilization				
Content	Sub-content	Undergraduate	Certificate	Graduate
General Content	Spaulding Levels	✓	✓	✓
	Basic principles of cleaning, disinfection, and sterilization	✓	✓	✓
	Regulatory requirements and resources	✓	✓	✓
Environmental cleaning and disinfection programs	Environmental cleaning and disinfection programs overview (staffing, infrastructure, policies, training)	✓	✓	✓
	Product selection (disinfectants and accessories)	✓		✓
Environmental cleaning and disinfection programs (Cont.)	PPE selection for EVS, decontamination, and sterilization roles	✓	✓	✓
	Surface cleaning and disinfection procedures	✓	✓	✓
	Quality assurance techniques and indicators	✓		✓
High level disinfection	HLD overview and basic principles	✓	✓	✓
	Types of HLD	✓		✓
	HLD for specific equipment types (e.g., endoscopes, probes, etc.)	✓	✓	✓
	Quality assurance techniques and indicators	✓		✓

Topic	Cleaning, Disinfection, and Sterilization			
Content	Sub-content	Undergraduate	Certificate	Graduate
Sterilization	Sterilization overview and basic principles	✓	✓	✓
	Types of sterilization (e.g., steam, dry heat, chemical, plasma gas, vaporized hydrogen peroxide)	✓		✓
	Sterile Processing Department (SPD) overview (decontamination)	✓		✓
	Quality assurance techniques and indicators	✓		✓
	Sterile space design and sterile storage	✓		✓

Learning Objectives: Cleaning, Disinfection, and Sterilization – Undergraduate Level:

1. Knowledge/Remember:

- Define the concepts of cleaning, disinfection, and sterilization in the healthcare environment.
- Identify the regulatory requirements and resources for cleaning, disinfection, and sterilization.
- Explain the principles and types of environmental cleaning and disinfection programs, high-level disinfection, and sterilization.

2. Comprehension:

- Summarize the key principles and components of cleaning, disinfection, and sterilization in healthcare settings.
- Compare and contrast different regulatory requirements and resources for cleaning, disinfection, and sterilization.
- Interpret the impact of environmental cleaning and disinfection programs, high-level disinfection, and sterilization on patient safety and infection control.

3. Application:

- Apply the principles of cleaning, disinfection, and sterilization to real-life scenarios in healthcare settings.

- Analyze the effectiveness of different cleaning, disinfection, and sterilization modalities in preventing healthcare-associated infections.
- Develop strategies to enhance healthcare organizations' cleaning, disinfection, and sterilization practices.

Learning Objectives: Cleaning, Disinfection, and Sterilization – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing cleaning, disinfection, and sterilization programs in healthcare settings.
- Assess the impact of regulatory requirements and resources on the implementation and effectiveness of cleaning, disinfection, and sterilization practices.
- Analyze the ethical considerations associated with cleaning, disinfection, and sterilization in healthcare.

2. Synthesis:

- Propose improvements to existing cleaning, disinfection, and sterilization approaches in healthcare settings.
- Design a comprehensive cleaning, disinfection, and sterilization program tailored to a healthcare organization's specific needs.
- Create a plan for implementing and monitoring cleaning, disinfection, and sterilization practices in healthcare settings.

3. Evaluation:

- Critically evaluate the effectiveness of cleaning, disinfection, and sterilization programs in preventing healthcare-associated infections.
- Assess the impact of cleaning, disinfection, and sterilization on patient outcomes and healthcare costs.
- Justify the importance of ongoing evaluation and refinement of cleaning, disinfection, and sterilization practices.

Learning Objectives: Cleaning, Disinfection, and Sterilization – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of cleaning, disinfection, and sterilization in healthcare.
- Evaluate the effectiveness of different cleaning, disinfection, and sterilization models and frameworks.
- Assess the limitations and challenges of implementing advanced cleaning, disinfection, and sterilization strategies.

2. Synthesis:

- Integrate various theoretical perspectives on cleaning, disinfection, and sterilization to develop a comprehensive framework for healthcare settings.

- Design a research study to investigate the relationship between cleaning, disinfection, and sterilization practices and healthcare outcomes.
- Develop innovative strategies to overcome cleaning, disinfection, and sterilization barriers in healthcare organizations.

3. Creation:

- Generate a theoretical model that incorporates cleaning, disinfection, and sterilization as central components of healthcare practices.
- Design and implement a comprehensive cleaning, disinfection, and sterilization program for a healthcare organization.
- Contribute to advancing knowledge in the field by publishing research on the role of cleaning, disinfection, and sterilization in healthcare.

Instructional Strategies: Cleaning, Disinfection, and Sterilization

Case Studies: Provide students with real-life scenarios or case studies related to cleaning, disinfection, and sterilization in healthcare settings. Ask them to analyze the principles and components of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of cleaning, disinfection, and sterilization practices.

Cooperative Learning: Divide students into small groups and assign them different aspects of cleaning, disinfection, and sterilization. For example, one group can focus on environmental cleaning, another on high-level disinfection, and another on sterilization. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to cleaning, disinfection, and sterilization. For example, organize visits to healthcare organizations where students can observe and participate in cleaning and sterilization processes. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on cleaning, disinfection, and sterilization for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of the concepts.

Inquiry-Based Learning: Encourage students to explore specific cleaning, disinfection, and sterilization topics through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based strategies. This strategy fosters curiosity, critical thinking, and independent learning in cleaning, disinfection, and sterilization.

Interactive Lectures with Technology: Use tools like polling software or online discussion boards to engage students in interactive lectures. In real time, incorporate quizzes, polls, and group discussions to assess students' understanding of cleaning, disinfection, and sterilization. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of cleaning, disinfection, and sterilization. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of cleaning, disinfection, and sterilization.

Peer Instruction: Incorporate peer-to-peer teaching and learning in cleaning, disinfection, and sterilization. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or scenarios requiring cleaning, disinfection, and sterilization principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that applies cleaning, disinfection, and sterilization principles. For example, ask them to design and implement a comprehensive cleaning and disinfection program for a healthcare organization. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying cleaning, disinfection, and sterilization principles. For example, simulate a situation where students must decide about appropriate cleaning and disinfection methods for different healthcare settings. This strategy allows students to develop communication, problem-solving, and decision-making skills in cleaning, disinfection, and sterilization.

Service Learning: Engage students in service-learning projects that address current cleaning, disinfection, and sterilization challenges. Encourage students to apply their knowledge and skills to design and implement interventions in collaboration with healthcare organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students hands-on experience applying cleaning, disinfection, and sterilization principles. For example, simulate a healthcare setting where students must decide about appropriate sterilization methods for medical equipment. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in cleaning, disinfection, and sterilization.

Socratic Method: Engage students in a dialogue-based approach to teaching cleaning, disinfection, and sterilization. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to cleaning, disinfection, and sterilization and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on cleaning, disinfection, and sterilization.

Technical Competency 3: Principles of Applied Epidemiology and Surveillance is defined as the foundational topics of infectious disease surveillance, including outbreak investigations, epidemiological methodologies, measurements, and plan design.

The check marks in the table below indicate examples of the content expected to be included in this competency for each program level.

Topic		Principles of Applied Epidemiology and Surveillance		
Content	Sub-content	Undergraduate	Certificate	Graduate
General Content	Overview of epidemiology and statistics	✓	✓	✓
	Epidemics, endemics, pandemics	✓	✓	✓
	Key factors to healthcare/hospital epidemiology	✓	✓	✓
Measurements	Basic measures in Epi for IPs (e.g., ratios, proportions, rates, prevalence, incidence)	✓	✓	✓
	Association: Measures of association epidemiology - quantifies the relationship between exposure and disease among the two groups	✓	✓	✓
	Measures of Frequency, Measures of Central Tendency & Measures of Dispersion	✓	✓	✓

Topic	Principles of Applied Epidemiology and Surveillance			
Content	Sub-content	Undergraduate	Certificate	Graduate
Measurements (Cont.)	(e.g., standard deviations)			
	Specificity & sensitivity	✓	✓	✓
Outbreak investigations	Overview of field epidemiology and investigation	✓		✓
	Basic tools to detect, investigate, and interpret infectious disease outbreaks	✓	✓	✓
	Preparing for, identifying & responding to outbreaks	✓	✓	✓
Surveillance methodologies	Total (or whole) house surveillance	✓		✓
	Targeted Surveillance	✓	✓	✓
	Combination surveillance strategy	✓		✓
	Surveillance in non-hospital settings	✓		✓
	Hospital-based surveillance	✓		✓
	Surveillance for construction-related infections	✓		✓
	Lab ID*	✓		✓
	Outbreak detection	✓	✓	✓
	Selecting surveillance methodology	✓	✓	✓
	Developing a surveillance plan	✓	✓	✓
	Using surveillance criteria (case definitions)	✓		✓

Principles of Applied Epidemiology and Surveillance				
Topic	Content	Sub-content	Undergraduate	Certificate Graduate
Surveillance methodologies (cont.)		Surveillance program evaluation	✓	✓
		Surveillance systems (e.g., Vigilanz, WHONet, configuration, reporting [ELR])	✓	✓

**This content may not be relevant for non-US-based programs.*

Learning Objectives: Principles of Applied Epidemiology and Surveillance – Undergraduate Level:

1. Knowledge/Remember:

- Define the concepts of infectious disease surveillance, outbreak investigations, and epidemiological methodologies.
- Identify the importance of measurements and plan design in applied epidemiology and surveillance.
- Explain the basic principles and concepts of applied epidemiology and surveillance.

2. Comprehension:

- Summarize the key principles and components of infectious disease surveillance and outbreak investigations.
- Compare and contrast different epidemiological methodologies used in applied epidemiology and surveillance.
- Interpret the impact of measurements and plan design on applied epidemiology and surveillance effectiveness.

3. Application:

- Apply the principles of applied epidemiology and surveillance to real-life scenarios in outbreak investigations.
- Analyze the effectiveness of different epidemiological methodologies in identifying and controlling infectious disease outbreaks.
- Develop strategies to enhance measurements and plan design in applied epidemiology and surveillance.

Learning Objectives: Principles of Applied Epidemiology and Surveillance – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing infectious disease surveillance systems and outbreak investigation protocols.

- Assess the impact of different epidemiological methodologies on the accuracy and reliability of surveillance data.
- Analyze the ethical considerations associated with applied epidemiology and surveillance.
- Review case studies and outbreak investigations to understand the epidemiological methods used.

2. Synthesis:

- Propose improvements to existing infectious disease surveillance systems and outbreak investigation protocols.
- Design a comprehensive plan for implementing and monitoring applied epidemiology and surveillance practices.
- Create a plan for enhancing measurements and plan design in applied epidemiology and surveillance.

3. Evaluation:

- Critically evaluate the effectiveness of infectious disease surveillance systems and outbreak investigation protocols in identifying and controlling outbreaks.
- Assess the impact of different epidemiological methodologies on the accuracy and reliability of surveillance data.
- Justify the importance of ongoing evaluation and refinement of measurements and plan design in applied epidemiology and surveillance.

Learning Objectives: Principles of Applied Epidemiology and Surveillance – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of applied epidemiology and surveillance.
- Evaluate the effectiveness of different epidemiological models and frameworks in the field.
- Assess the limitations and challenges of implementing advanced measurements and plan design in applied epidemiology and surveillance.

2. Synthesis:

- Integrate various theoretical perspectives on applied epidemiology and surveillance to develop a comprehensive framework.
- Design a research study to investigate the relationship between different epidemiological methodologies and the effectiveness of applied epidemiology and surveillance.
- Develop innovative strategies to overcome barriers to measurements and plan design in applied epidemiology and surveillance.

3. Creation:

- Generate a theoretical model incorporating applied epidemiology and surveillance as central disease control and prevention components.
- Design and implement a comprehensive applied epidemiology and surveillance program for a healthcare organization.
- Contribute to advancing knowledge in the field by publishing research on the role of measurements and plan design in applied epidemiology and surveillance.

Instructional Strategies: Principles of Applied Epidemiology and Surveillance

Case Studies: Provide students with real-life scenarios or case studies related to applied epidemiology and surveillance. Ask them to analyze the principles and components of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of applied epidemiology and surveillance principles.

Cooperative Learning: Divide students into small groups and assign them different aspects of applied epidemiology and surveillance, such as infectious disease surveillance, outbreak investigations, or epidemiological methodologies. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to applied epidemiology and surveillance. For example, organize outbreak investigation simulations or data analysis exercises. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on applied epidemiology and surveillance for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of the concepts.

Inquiry-Based Learning: Encourage students to explore specific topics within applied epidemiology and surveillance through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based interventions. This strategy fosters curiosity, critical thinking, and independent learning in applied epidemiology and surveillance.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of applied epidemiology and surveillance in real-time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of applied epidemiology and surveillance. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of applied epidemiology and surveillance aspects.

Peer Instruction: Incorporate peer-to-peer teaching and learning in applied epidemiology and surveillance. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of applied epidemiology and surveillance principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires the application of applied epidemiology and surveillance principles. For example, ask them to design and implement a disease surveillance system or an outbreak investigation plan. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying applied epidemiology and surveillance principles. For example, simulate an outbreak response team meeting where students must make decisions based on available data and resources. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of applied epidemiology and surveillance.

Service Learning: Engage students in service-learning projects that require the application of applied epidemiology and surveillance skills to address current public health needs. Encourage students to apply their knowledge and skills to contribute to disease control and prevention efforts in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience applying applied epidemiology and surveillance principles. For example, simulate an outbreak scenario in which students analyze data, develop intervention strategies, and make decisions based on the simulation outcomes. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Engage students in a dialogue-based approach to teaching applied epidemiology and surveillance. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate strategies and approaches. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to applied epidemiology and surveillance and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and come up with a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on applied epidemiology and surveillance.

Technical Competency 4: Quality and Safety

The check marks in the table below indicate examples of the content expected to be included in this competency for each program level. Please note this table includes topics across all the areas within Quality and Safety, including Quality and Safety, Performance Improvement, Risk Assessment and Management, and Health Equity. Each area's definition, learning objectives, and instructional strategies are grouped and presented below the Topic table.

Topic	Quality and Safety			
Content	Sub-content	Undergraduate	Certificate	Graduate
General Content	Relationship between quality, patient safety, and IPC programs	✓	✓	✓
	High Reliability and culture of safety in healthcare organizations	✓	✓	✓
	Health Equity	✓	✓	✓
	Performance Improvement Overview	✓	✓	✓
	Using surveillance data for PI (e.g., monitoring)	✓	✓	✓
Safety	Adverse event reporting (e.g., sentinel event)	✓		✓
	High reliability and systems thinking (e.g., hand hygiene audits)	✓	✓	✓
	Healthcare worker safety	✓	✓	✓
	Human factor engineering	✓	✓	✓
Quality Programs and Metrics	Key quality metrics (e.g. PSIs, HACs, eCQMs, etc)	✓		✓
	Accrediting bodies (e.g., TJC and DNV)	✓	✓	✓

Topic	Quality and Safety			
Content	Sub-content	Undergraduate	Certificate	Graduate
Quality Programs and Metrics (Cont.)	Regulatory bodies (e.g., CMS, OSHA, DOH)	✓	✓	✓
	NHSN Reporting (state and national reporting requirements)	✓	✓	✓
	Mandatory and Public Reporting	✓	✓	✓
	Process vs. outcome metrics	✓	✓	✓
	Designing, implementing, and evaluating QI initiatives	✓	✓	✓
	Developing metrics for QI	✓		✓
Tools and Methodologies	Performance Improvement and Implementation Science Models (e.g., IHI, Lean, Six sigma)	✓	✓	✓
	Technologies for performance improvement (e.g., hand hygiene monitoring, environmental cleaning validation)	✓		✓
	Implementation Science	✓	✓	✓
	Utilizing EMR as a Performance Improvement tool	✓	✓	✓
	Tools for selecting, implementing, and assessing effective interventions	✓	✓	✓
Data Analysis and Interpretation	Fundamental concepts of using data and communicating it effectively	✓	✓	✓

Quality and Safety is defined as foundational concepts of high reliability and systems thinking as well as key quality and accrediting organizations. Content includes adverse event reporting, healthcare worker safety, quality metrics, and reporting requirements.

Learning Objectives: Quality and Safety – Undergraduate Level:

1. Knowledge/Remember:

- Define the concepts of quality and safety in the healthcare context.
- Identify the key principles of high reliability and systems thinking.
- Explain the role of quality and accrediting organizations in promoting healthcare quality and safety.
- Describe the process of reporting adverse events and their importance in improving patient safety.
- Identify the key components of healthcare worker safety and the measures to ensure a safe work environment.
- Explain the importance of quality metrics and reporting requirements in assessing and improving healthcare quality and safety.

2. Comprehension:

- Summarize the key principles and components of high reliability and systems thinking in healthcare.
- Compare and contrast different approaches to adverse event reporting and healthcare worker safety.
- Interpret the impact of quality metrics and reporting requirements on healthcare quality and safety.

3. Application:

- Apply the principles of high reliability and systems thinking to real-life scenarios in healthcare.
- Analyze the effectiveness of adverse event reporting systems in improving patient safety.
- Develop strategies to enhance healthcare worker safety in a healthcare setting.
- Utilize quality metrics and reporting requirements to assess and improve healthcare quality and safety.

Learning Objectives: Quality and Safety – Certificate Level:

1. Analysis:

- Evaluate the effectiveness of various control measures.
- Assess the impact of adverse event reporting on patient safety and healthcare outcomes.
- Analyze the ethical considerations associated with healthcare worker safety and quality metrics.

2. Synthesis:

- Propose improvements to existing high reliability and systems thinking approaches in healthcare.
- Design a comprehensive adverse event reporting system tailored to the specific needs of a healthcare organization.
- Create a plan for implementing and monitoring healthcare worker safety measures.
- Develop strategies to address the challenges and limitations of quality metrics in assessing healthcare quality and safety.

3. Evaluation:

- Critically evaluate the effectiveness of high reliability and systems thinking in promoting healthcare quality and safety.
- Assess the impact of adverse event reporting on patient outcomes and healthcare culture.
- Evaluate the effectiveness of quality metrics in assessing and improving healthcare quality and safety.
- Justify the importance of ongoing evaluation and refinement of healthcare worker safety measures.

Learning Objectives: Quality and Safety – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of high reliability and systems thinking in healthcare.
- Evaluate the effectiveness of different high-reliability and systems thinking models and frameworks.
- Assess the limitations and challenges of implementing advanced approaches to adverse event reporting and healthcare worker safety.

2. Synthesis:

- Integrate various theoretical perspectives on high reliability and systems thinking to develop a comprehensive framework for healthcare.
- Design a research study to investigate the relationship between adverse event reporting and patient outcomes.
- Develop innovative strategies to overcome barriers to quality metrics in assessing and improving healthcare quality and safety.

3. Creation:

- Generate a theoretical model incorporating high reliability and systems thinking as central components of healthcare practices.
- Design and implement a comprehensive adverse event reporting system for a healthcare organization.
- Contribute to advancing knowledge in the field by publishing research on the role of quality metrics in assessing and improving healthcare quality and safety.

Instructional Strategies: Quality and Safety

Case Studies: Provide students with real-life scenarios or case studies related to quality and safety in healthcare. Ask them to analyze the quality and safety aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of quality and safety principles.

Cooperative Learning: Divide students into small groups and assign them different aspects of quality and safety, such as high reliability, adverse event reporting, or healthcare worker safety. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to quality and safety in healthcare. For example, organize visits to healthcare organizations where students can observe quality improvement initiatives or participate in adverse event reporting processes. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on quality and safety in healthcare for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of the concepts.

Inquiry-Based Learning: Encourage students to explore specific topics related to quality and safety in healthcare through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based interventions. This strategy fosters curiosity, critical thinking, and independent learning in quality and safety.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of quality and safety in healthcare in real time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of quality and safety in healthcare. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different aspects of quality and safety.

Peer Instruction: Incorporate peer-to-peer teaching and learning in quality and safety in healthcare. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of quality and safety principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires the application of quality and safety principles. For example, ask them to design and implement a quality improvement initiative in a healthcare organization. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying quality and safety principles. For example, simulate a quality improvement committee meeting where students must decide about improvement initiatives. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of quality and safety.

Service Learning: Engage students in service-learning projects that address healthcare organizations' current quality and safety challenges. Encourage students to apply their knowledge and skills to design and implement interventions in collaboration with healthcare organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience applying quality and safety principles. For example, simulate a quality improvement project in which students must decide based on data and evidence. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Engage students in a dialogue-based approach to teaching quality and safety in healthcare. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to quality and safety in healthcare and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and come up with a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on quality and safety.

Performance Improvement is defined as the basic concepts of performance improvement, including key methodologies and integration into program planning, implementation science, communicating and presenting data effectively, and internal benchmarking.

Learning Objectives: Performance Improvement – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of performance improvement and its importance in program planning and implementation.
- Identify key methodologies used in performance improvement.
- Explain the principles and components of integrating performance improvement into program planning and implementation.
- Describe effective strategies for communicating and presenting data in performance improvement.
- Identify the purpose and process of internal benchmarking in performance improvement.

2. Comprehension:

- Summarize the key principles and components of performance improvement.
- Compare and contrast different methodologies used in performance improvement.
- Interpret the impact of integrating performance improvement into program planning and implementation.
- Analyze the effectiveness of different strategies for communicating and presenting data in performance improvement.
- Explain the benefits and limitations of internal benchmarking in performance improvement.

3. Application:

- Apply performance improvement principles to real-life scenarios in program planning and implementation.
- Analyze the effectiveness of different methodologies in improving program performance.
- Develop strategies to enhance communication and data presentation skills in performance improvement.
- Utilize internal benchmarking techniques to identify areas for improvement in program performance.

Learning Objectives: Performance Improvement – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of different methodologies used in performance improvement.
- Assess the impact of integrating performance improvement into program planning and implementation.
- Analyze the ethical considerations associated with performance improvement.
- Evaluate the effectiveness of different strategies for communicating and presenting data in performance improvement.
- Assess the benefits and limitations of internal benchmarking in performance improvement.

2. Synthesis:

- Propose improvements to existing performance improvement methodologies.
- Design a comprehensive performance improvement plan tailored to a program's specific needs.
- Create a plan for implementing and monitoring performance improvement strategies.
- Develop effective strategies for communicating and presenting data in performance improvement.
- Design and implement an internal benchmarking process to improve program performance.

3. Evaluation:

- Critically evaluate the effectiveness of different methodologies in improving program performance.
- Assess the impact of performance improvement on program outcomes and quality.
- Justify the importance of ongoing evaluation and refinement of performance improvement strategies.
- Evaluate the effectiveness of communication and data presentation strategies in performance improvement.
- Assess the benefits and limitations of internal benchmarking in improving program performance.

Learning Objectives: Performance Improvement – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of performance improvement.
- Evaluate the effectiveness of different performance improvement models and frameworks.
- Assess the limitations and challenges of implementing advanced performance improvement strategies.
- Analyze the ethical considerations associated with performance improvement research and practice.
- Evaluate the impact of performance improvement on program outcomes and organizational performance.

2. Synthesis:

- Integrate various theoretical perspectives on performance improvement to develop a comprehensive framework.
- Design a research study to investigate the relationship between performance improvement strategies and program outcomes.
- Develop innovative strategies to overcome barriers to performance improvement in complex organizational settings.
- Create a theoretical model incorporating performance improvement as a central program planning and implementation component.
- Design and implement a comprehensive performance improvement program for an organization.

3. Creation:

- Generate a theoretical model incorporating performance improvement as a central program planning and implementation component.
- Design and implement a comprehensive performance improvement program for an organization.
- Contribute to advancing knowledge in the field by publishing research on the role of performance improvement in program outcomes.
- Develop innovative strategies to address performance improvement challenges in complex organizational settings.
- Design and implement a research study to investigate the effectiveness of performance improvement strategies in improving program outcomes.

Instructional Strategies: Performance Improvement

Case Studies: Provide students with real-life scenarios or case studies related to performance improvement. Ask them to analyze the performance improvement aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of performance improvement principles.

Cooperative Learning: Divide students into small groups and assign them different aspects of performance improvement, such as methodologies, communication strategies, or benchmarking. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to performance improvement. For example, ask students to design and implement a performance improvement plan for a simulated program. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on performance improvement for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of performance improvement concepts.

Inquiry-Based Learning: Encourage students to explore specific topics related to performance improvement through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based interventions. This strategy fosters curiosity, critical thinking, and independent learning in performance improvement.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of performance improvement in real time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of performance improvement. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different aspects of performance improvement.

Peer Instruction: Incorporate peer-to-peer teaching and learning in performance improvement. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of performance improvement principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires them to apply performance improvement principles. For example, ask them to design and implement a performance improvement plan for a healthcare organization. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying performance improvement principles. For example, simulate a performance improvement team meeting where students must decide about interventions and strategies. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of performance improvement.

Service Learning: Engage students in service-learning projects that require the application of performance improvement principles to address current needs. Encourage students to apply their knowledge and skills to improve program outcomes in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience applying performance improvement principles. For example, simulate a performance improvement project in which students must make decisions and analyze outcomes. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in performance improvement.

Socratic Method: Engage students in a dialogue-based approach to teaching performance improvement. Ask open-ended questions to stimulate critical thinking and

encourage students to analyze and evaluate different strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to performance improvement and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and come up with a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on performance improvement.

Risk Assessment and Management is defined as the basic concepts of the identification, assessment, and mitigation of infectious disease related risk.

Learning Objectives: Risk Assessment and Management – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of risk assessment and management in the context of infectious diseases.
- Identify the basic principles and components of risk assessment, including identifying and assessing infectious disease-related risks.
- Explain the importance of risk mitigation strategies in preventing and controlling infectious diseases.

2. Comprehension:

- Summarize the key principles and components of risk assessment and management in infectious diseases.
- Compare and contrast different approaches to risk assessment and management.
- Interpret the impact of risk assessment and management on preventing and controlling infectious diseases.

3. Application:

- Apply the principles of risk assessment and management to real-life scenarios in infectious disease control.
- Analyze the effectiveness of different risk assessment and management strategies in preventing and controlling infectious diseases.
- Develop strategies to enhance risk assessment and management practices in infectious disease control.

Learning Objectives: Risk Assessment and Management – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing risk assessment and management frameworks in infection control.
- Assess the impact of risk assessment and management on the effectiveness of infectious disease control measures.
- Analyze the ethical considerations associated with risk assessment and management in infectious disease control.
- Analyze simulated outbreak scenarios to identify the source and mode of transmission.

2. Synthesis:

- Propose improvements to existing risk assessment and management approaches in infectious disease control.
- Design a comprehensive risk assessment and management plan tailored to the specific needs of a healthcare organization or community.
- Create a plan for implementing and monitoring risk assessment and management practices in infectious disease control.

3. Evaluation:

- Critically evaluate the effectiveness of risk assessment and management in preventing and controlling infectious diseases.
- Assess the impact of risk assessment and management on public health outcomes.
- Justify the importance of ongoing evaluation and refinement of risk assessment and management practices in infectious disease control.

Learning Objectives: Risk Assessment and Management – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of risk assessment and management in infectious disease control.
- Evaluate the effectiveness of different risk assessment and management models and frameworks.
- Assess the limitations and challenges of implementing advanced risk assessment and management strategies in infectious disease control.

2. Synthesis:

- Integrate various theoretical perspectives on risk assessment and management to develop a comprehensive framework for infectious disease control.
- Design a research study to investigate the relationship between risk assessment and management strategies and infectious disease control outcomes.
- Develop innovative strategies to overcome risk assessment and management barriers in infectious disease control.

3. Creation:

- Generate a theoretical model incorporating risk assessment and management as central components of infectious disease control practices.
- Design and implement a comprehensive risk assessment and management program for a healthcare organization or community.
- Contribute to advancing knowledge in the field by publishing research on the role of risk assessment and management in infectious disease control.

Instructional Strategies: Risk Assessment and Management

Case Studies: Provide students with real-life scenarios or case studies related to risk assessment and management in infectious disease control. Ask them to analyze the risk assessment and management aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of risk assessment and management principles.

Cooperative Learning: Divide students into small groups and assign them different risk assessment and management aspects. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to risk assessment and management. For example, ask students to conduct a risk assessment in a healthcare setting or develop a risk management plan for a specific infectious disease. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on risk assessment and management for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of the concepts.

Inquiry-Based Learning: Encourage students to explore specific risk assessment and management topics through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based risk assessment and management strategies. This strategy fosters curiosity, critical thinking, and independent risk assessment and management learning.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' real-time understanding of risk assessment and management. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific risk assessment and management aspect. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different aspects of risk assessment and management.

Peer Instruction: Incorporate peer-to-peer teaching and learning in risk assessment and management. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require applying risk assessment and management principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires the application of risk assessment and management principles. For example, ask them to develop a risk assessment and management plan for a healthcare organization or community. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying risk assessment and management principles. For example, simulate a risk management meeting where students must decide about risk mitigation strategies. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of risk assessment and management.

Service Learning: Engage students in service-learning projects that require applying risk assessment and management skills to inform evidence-based interventions or policy recommendations. Encourage students to apply their knowledge and skills to address current risk assessment and management needs in collaboration with healthcare organizations or community partners. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students hands-on experience applying risk assessment and management principles. For example, simulate a risk assessment process where students must make decisions based on risk outcomes. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in risk assessment and management.

Socratic Method: Engage students in a dialogue-based approach to teaching risk assessment and management. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to risk assessment and management and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and come up with a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on risk assessment and management.

Health Equity is defined as the health status and outcomes within a group of people. Content includes telehealth, community-based IPC programs, social determinants of health, health equity and disparities, and vaccine hesitancy.

Learning Objectives: Health Equity – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of health equity and its importance in understanding the health status and outcomes within a group of people.
- Identify key components of telehealth, community-based infection prevention and control (IPC) programs, social determinants of health, health equity and disparities, and vaccine hesitancy.

2. Comprehension:

- Summarize the key principles and components of telehealth, community-based IPC programs, social determinants of health, health equity and disparities, and vaccine hesitancy.
- Compare and contrast different approaches to health equity interventions.
- Interpret the impact of social determinants of health on health outcomes within a population.

3. Application:

- Apply the principles of health equity to real-life scenarios in telehealth, community-based IPC programs, social determinants of health, health equity and disparities, and vaccine hesitancy.
- Analyze the effectiveness of different health equity interventions in improving health outcomes.
- Develop strategies to enhance health equity practices in various settings.

Learning Objectives: Health Equity – Certificate Level

1. Analysis:

- Evaluate the complex interplay among individual, community, and systemic factors in influencing health status and outcomes within a group of people.

2. Synthesis:

- Develop comprehensive approaches to address complex challenges in health equity, incorporating interdisciplinary perspectives and considering cultural diversity.

3. Evaluation:

- Critically evaluate the outcomes and impact of health equity interventions, considering ethical, cultural, and global perspectives. Assess the impact of health equity efforts on health equity and social justice.

4. Creation:

- Design a telehealth program that is tailored to the unique characteristics and challenges of the population.
- Propose strategies to address health equity and disparities in a population health context.
- Develop strategies to address vaccine hesitancy and promote vaccine acceptance in a specific population.

Learning Objectives: Health Equity – Graduate Level

1. Analysis:

- Evaluate the complex interplay among individual, community, and global factors in influencing health status and outcomes within a group of people.

2. Synthesis:

- Develop innovative approaches and interventions based on health equity principles to address complex challenges in telehealth, community-based IPC programs, social determinants of health, health equity and disparities, and vaccine hesitancy, considering cultural, social, and global perspectives.

3. Evaluation:

- Critically evaluate the effectiveness and sustainability of health equity interventions, considering ethical, cultural, and global perspectives. Assess the impact of health equity efforts on health equity, social justice, and global health outcomes.

Instructional Strategies: Health Equity

Case Studies: Provide students with real-life scenarios or case studies related to health equity. Ask them to analyze the health equity aspects of each case and propose appropriate interventions. Encourage group discussions and critical thinking to enhance their understanding of health equity principles.

Cooperative Learning: Divide students into small groups and assign them different aspects of health equity, such as telehealth, community-based IPC programs, or social determinants of health. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to health equity. For example, organize visits to community-based IPC programs or telehealth centers where students can observe and participate in health equity interventions. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on health equity for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of health equity concepts.

Inquiry-Based Learning: Encourage students to explore specific topics within health equity through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based interventions. This strategy fosters curiosity, critical thinking, and independent learning in health equity.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of health equity in real time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of health equity. Ask each group to become an expert in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of health equity.

Peer Instruction: Incorporate peer-to-peer teaching and learning in health equity. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of health equity principles. Ask them to analyze the situation, identify relevant interventions, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires the application of health equity principles. For example, ask them to design and implement a health equity intervention targeting a specific health issue. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying health equity principles. For example, simulate a community meeting where students must address vaccine hesitancy or discuss social determinants of health. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of health equity.

Service Learning: Engage students in service-learning projects that address current health equity challenges. Encourage students to apply their knowledge and skills to design and implement interventions in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience in applying health equity principles. For example, simulate a telehealth consultation in which students make decisions based on health equity principles. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Engage students in a dialogue-based approach to teaching health equity. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different interventions. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to health equity and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and come up with a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on health equity.

Technical Competency 5: IPC Practice and Operations is defined as the foundational topics of infection prevention practice and operations, including competencies and responsibilities of IPC, infection types and mitigation strategies, key advisory resources, and education.

The check marks in the table below indicate examples of the content expected to be included in this competency for each program level.

Topic	IPC Practice and Operations			
Content	Sub-content	Undergraduate	Certificate	Graduate
The Role of the IP	Being an IP - APIC Competency Model	✓	✓	✓
	Certification overview/value	✓	✓	✓
	Intersection & boundaries with other departments including Employee Health & Emergency Management, etc.			✓
	Professional IP Codes of Conduct	✓	✓	✓
	Overview of IPC practice	✓	✓	✓
	IPs as leaders	✓	✓	✓
Principles of Infection Prevention Practice	Hand hygiene	✓	✓	✓
	Standard precautions	✓	✓	✓
	Isolation precautions (Transmission-based Precautions)	✓	✓	✓
	Healthcare Associated Infections	✓	✓	✓
	Bloodborne Pathogen Program	✓	✓	✓
	Aerosol Transmissible Disease Program (Respiratory Protection Program)	✓	✓	✓
	Infection Prevention for special populations and care settings	✓		✓
	IPC program key drivers and design	✓		✓
	Employee Health	✓		✓

Topic	IPC Practice and Operations			
Content	Sub-content	Undergraduate	Certificate	Graduate
Key Advisory Organizations	APIC	✓	✓	✓
	SHEA/IDSA	✓	✓	✓
	AAMI's Journal	✓	✓	✓
	AORN	✓	✓	✓
	ASHRAE	✓	✓	✓
	FGI	✓	✓	✓
	CDC	✓	✓	✓
	WHO	✓	✓	✓
	FDA	✓	✓	✓
	OSHA	✓	✓	✓
IPs as Educators	Health literacy	✓		✓
	Principles of adult learning	✓	✓	✓
General Content	Annual organizational risk assessment, evaluations, and program plans	✓	✓	✓
	Issue-specific risk assessments (e.g., using multi-dose from single-dose vial)	✓	✓	✓

Learning Objectives: IPC Practice and Operations – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of IPC practice and operations.
- Identify the principles and components of infection prevention and control programs.
- Identify the competencies and responsibilities of IPC practitioners.
- Explain different types of infections and their mitigation strategies.
- Recognize key advisory resources in the field of IPC.
- Understand the importance of education in IPC practice and operations.

2. Comprehension:

- Summarize the key competencies and responsibilities of IPC practitioners.
- Compare and contrast different types of infections and their mitigation strategies.
- Interpret the information provided by key advisory resources in IPC.
- Analyze the role of education in promoting effective IPC practice and operations.

3. Application:

- Apply the competencies and responsibilities of IPC practitioners to real-life scenarios.
- Analyze the effectiveness of different mitigation strategies for specific types of infections.
- Evaluate the effectiveness of infection control measures.
- Utilize key advisory resources to inform decision-making in IPC practice and operations.
- Demonstrate understanding of how to implement standard precautions and transmission-based precautions.
- Develop strategies to enhance education and training in IPC practice and operations.

Learning Objectives: IPC Practice and Operations - Certificate Level

1. Analysis:

- Evaluate the complex interplay among individual, organizational, and environmental factors influencing infection prevention practices and operations.

2. Synthesis:

- Develop comprehensive approaches to address complex challenges in infection prevention practice and operations, incorporating interdisciplinary perspectives and considering cultural diversity.

3. Evaluation:

- Critically evaluate the outcomes and impact of infection prevention interventions, considering ethical, cultural, and global perspectives.

Learning Objectives: IPC Practice and Operations – Graduate Level

1. Analysis:

- Evaluate the complex interplay among individual, organizational, and systemic factors influencing infection prevention practices and operations in diverse healthcare settings.

2. Synthesis:

- Develop innovative approaches and interventions based on infection prevention principles to address complex challenges in infection prevention practice and operations, considering cultural, social, and global perspectives.

3. Evaluation:

- Critically evaluate the effectiveness and sustainability of infection prevention interventions, considering ethical, cultural, and global perspectives. Assess the impact of infection prevention efforts on healthcare equity and patient safety.

4. Creation:

- Develop effective infection mitigation strategies based on the types of infections encountered in healthcare settings.

Instructional Strategies: IPC Practice and Operations

Case Studies: Provide students real-life scenarios or case studies related to IPC practice and operations. Ask them to analyze the competencies and responsibilities of IPC practitioners, identify appropriate mitigation strategies, and propose actions based on key advisory resources.

Cooperative Learning: Divide students into small groups and assign different roles within an IPC team. Ask each group to research and present their findings on competencies, responsibilities, infection types, mitigation strategies, and key advisory resources. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to IPC practice and operations. For example, organize visits to healthcare settings where students can observe IPC practices and participate in simulations or role-plays. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on IPC practice and operations for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of the concepts.

Inquiry-Based Learning: Encourage students to explore specific topics within IPC practice and operations through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based interventions. This strategy fosters curiosity, critical thinking, and independent learning in IPC.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of IPC practice and operations in real time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of IPC practice and operations. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different aspects of IPC.

Peer Instruction: Incorporate peer-to-peer teaching and learning in IPC practice and operations. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of IPC practice and operations principles. Ask them to analyze the situation, identify appropriate competencies and responsibilities, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires them to apply IPC practice and operations principles. For example, ask them to design and implement an IPC program for a healthcare organization. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying IPC practice and operations principles. For example, simulate a situation where students must decide about appropriate mitigation strategies for specific types of infections. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of IPC.

Service Learning: Engage students in service-learning projects that require the application of IPC practice and operations principles. Encourage students to apply their knowledge and skills to address current IPC needs in collaboration with healthcare organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience applying IPC practice and operations principles. For example, simulate an outbreak situation in which students must make decisions based on IPC competencies and responsibilities. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in IPC.

Socratic Method: Engage students in a dialogue-based approach to teaching IPC practice and operations. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different aspects of IPC. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to IPC practice and operations and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on IPC practice and operations.

Technical Competency 6: Data Management is defined as the analysis and management of applicable data required to create actionable interventions. Content includes benchmarking, data collection and mining, data visualization, surveillance systems, and use of technology tools (e.g., Electronic medical records [EMR]).

The check marks in the table below indicate examples of the content expected to be included in this competency for each program level.

Topic		Data Management			
Content	Sub-content	Sub-Topics	Undergraduate	Certificate	Graduate
Data Analysis and Management	Benchmarking and comparing data		✓	✓	✓
	Data collection and analysis		✓	✓	✓
	Preparing reports and presenting data in a meaningful way		✓		✓
	DEI awareness when designing and analyzing				✓
Technology Tools	EMR	EMR Design and Implementation			✓
	EMR	Order entry documentation			✓
	EMR	Use of decision support within the EMR			✓

Learning Objectives: Data Management – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of data management in the context of analyzing and managing applicable data for actionable interventions.
- Identify the importance of benchmarking, data collection, data mining, data visualization, surveillance systems, and technology tools in data management.

2. Comprehension:

- Summarize the key principles and components of benchmarking, data collection, data mining, data visualization, surveillance systems, and technology tools in data management.
- Compare and contrast different approaches to data management in various settings.
- Interpret the impact of data management on creating actionable interventions.

3. Application:

- Apply data management principles to real-life scenarios when analyzing and managing applicable data.
- Analyze the effectiveness of different data management strategies in creating actionable interventions.
- Develop strategies to enhance data management practices by utilizing benchmarking, data collection, data mining, data visualization, surveillance systems, and technology tools.

Learning Objectives: Data Management – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of different data management strategies in benchmarking, data collection, data mining, data visualization, surveillance systems, and technology tools.
- Assess the impact of data management on the quality and outcomes of actionable interventions.
- Analyze data on infectious diseases to identify risk factors and transmission patterns.
- Analyze the ethical considerations associated with data management.

2. Synthesis:

- Propose improvements to existing data management approaches utilizing benchmarking, data collection, data mining, data visualization, surveillance systems, and technology tools.
- Design a comprehensive data management program tailored to an organization's needs.
- Create a plan for implementing and monitoring data management practices.

3. Evaluation:

- Critically evaluate the effectiveness of data management in creating actionable interventions.
- Assess the impact of data management on organizational outcomes and decision-making processes.
- Justify the importance of ongoing evaluation and refinement of data management practices.

Learning Objectives: Data Management – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of data management by utilizing benchmarking, data collection, data mining, data visualization, surveillance systems, and technology tools.
- Evaluate the effectiveness of different data management models and frameworks.
- Assess the limitations and challenges of implementing advanced data management strategies.

2. Synthesis:

- Integrate various theoretical perspectives on data management to develop a comprehensive framework.
- Design a research study to investigate the relationship between data management practices and organizational outcomes.
- Develop innovative strategies to overcome barriers to data management by utilizing benchmarking, data collection, data mining, data visualization, surveillance systems, and technology tools.

3. Creation:

- Generate a theoretical model incorporating data management as a central component of organizational practices.
- Design and implement an organization's comprehensive data management program by examining data on infectious diseases to identify risk factors and transmission patterns.
- Contribute to advancing knowledge in the field by publishing research on the role of data management in creating actionable interventions.

Instructional Strategies: Data Management

Case Studies: Provide students with real-life case studies related to data management. Ask them to analyze the principles and components of each case and propose appropriate data management strategies. Encourage group discussions and critical thinking to enhance their understanding of data management principles.

Cooperative Learning: Divide students into small groups and assign them different aspects of data management, such as benchmarking, data collection, data mining, data visualization, surveillance systems, or technology tools. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to data management. For example, organize data analysis workshops or data visualization projects. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on data management for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or data analysis simulations, where students can apply and reinforce their understanding of data management concepts.

Inquiry-Based Learning: Encourage students to explore specific topics within data management through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based strategies. This strategy fosters curiosity, critical thinking, and independent learning in data management.

Interactive Lectures with Technology: Use tools like data analysis software or online visualization platforms to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of data management in real time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of data management. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different aspects of data management.

Peer Instruction: Incorporate peer-to-peer teaching and learning in data management. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of data management principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires them to apply data management principles. For example, ask them to design and implement a specific organization's data collection and analysis plan. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying data management principles. For example, simulate a data analysis team meeting where students must decide about data collection methods and analysis techniques. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of data management.

Service Learning: Engage students in service-learning projects that require data management skills to support organizations in analyzing and managing applicable data. Encourage students to apply their knowledge and skills to address applied data management needs in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students hands-on experience applying data management principles. For example, simulate a data analysis project in which students make decisions about data collection, analysis, and visualization. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Engage students in a dialogue-based approach to teaching data management. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different data management strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to data management and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on data management.

Technical Competency 7: Microbiology, Antimicrobial Stewardship, and Laboratory Methods

The check marks in the table below indicate examples of the content expected to be included in this competency for each program level. Please note this table includes topics across all the areas within Microbiology, Antimicrobial Stewardship, and Laboratory Methods including Microbiology and Laboratory Methods, and Antimicrobial Stewardship. Each area's definition, learning objectives, and instructional strategies are grouped and presented below the Topic table.

Topic Microbiology, Antimicrobial Stewardship, and Laboratory Methodology				
Content	Sub-content	Undergraduate	Certificate	Graduate
General Content	Overview and history of antimicrobials, antimicrobial resistance, stewardship	✓	✓	✓
	Development of antimicrobials	✓	✓	✓
	Pharmacy Department Role in Antibiotic Stewardship	✓		✓
	Human behaviors that accelerate development and problematic antimicrobial prescribing patterns (along with interventions)	✓	✓	✓
	Use of antibiograms	✓		✓
	IPC role in stewardship	✓	✓	✓
	Basic components and outcome measures for an antimicrobial stewardship program	✓	✓	✓
	Surveillance (AMR/HAI)	✓		✓
	Diagnostic Stewardship & impact on HAIs	✓	✓	✓
	Infectious disease overview	✓	✓	✓
	Characteristics of most common pathogens	✓	✓	✓
	Biology of bacterial, viral, fungal, and parasitic pathogens	✓	✓	✓
	Diseases caused by bacterial, viral, fungal, and parasitic pathogens	✓	✓	✓
	Antimicrobial susceptibility testing methodologies (phenotypic and genotypic)	✓		✓
	Emerging pathogens and antimicrobial resistance	✓		✓

Topic	Microbiology, Antimicrobial Stewardship, and Laboratory Methodology			
Content	Sub-content	Undergraduate	Certificate	Graduate
Bacteria	Overview: classification, structure, transmission	✓	✓	✓
	Mechanisms of pathogenesis, virulence factors, and host immune response	✓		✓
	Cocci, bacilli, spirilla, vibrio, and spirochaetes	✓		✓
	Aerobic versus anaerobic	✓		✓
	Gram positive versus gram negative	✓		✓
	Pathogenic versus normal flora	✓	✓	✓
Viruses	Overview of viruses: classification, structure, transmission	✓		✓
	Mechanisms of pathogenesis, virulence factors, and host immune response	✓		✓
	RNA versus DNA viruses	✓		✓
	Enveloped versus non-enveloped	✓		✓
Fungus	Overview: classification, structure, transmission	✓	✓	✓
	Mechanisms of pathogenesis, virulence factors, and host immune response	✓		✓
	Yeast and molds	✓		✓
Parasites	Overview: classification, structure, transmission	✓		✓
	Mechanisms of pathogenesis, virulence factors, and host immune response	✓		✓
	Protozoa, helminths, and ectoparasites	✓		✓
Lab	Microbiology in action for IPs: immunology	✓		✓
	Fundamental diagnostic tests	✓	✓	✓
	Diagnostic stewardship	✓		✓
	Interpretation of lab results	✓	✓	✓
	Culture results: sample collection practices, interpretation, and reassessment	✓		✓

Microbiology and Laboratory Methods is defined as laboratory methods relevant to the infection preventionist. This includes basic concepts of microorganisms that cause disease or infection in humans (e.g., bacteria, viruses, fungi, parasites), the laboratory techniques utilized to identify them, as well as appropriate use of these tests.

Learning Objectives: Microbiology and Laboratory Methods – Undergraduate Level:

1. Knowledge/Remember:

- Identify different types of microorganisms and their characteristics.
- Define the basic concepts of microorganisms that cause human disease or infection, including bacteria, viruses, fungi, and parasites.
- Explore the mechanisms by which microorganisms invade and colonize host tissues.
- Identify the laboratory techniques used to identify microorganisms.
- Explain the appropriate use of laboratory tests in the identification of microorganisms.

2. Comprehension:

- Summarize the key principles and components of laboratory methods in microbiology.
- Compare and contrast different laboratory techniques used to identify microorganisms.
- Interpret the significance of laboratory test results in diagnosing and treating infectious diseases.

3. Application:

- Apply knowledge of microorganisms and laboratory techniques to real-life scenarios to identify infectious agents.
- Analyze the effectiveness of different laboratory methods in identifying microorganisms.
- Develop strategies to enhance the appropriate use of laboratory tests in diagnosing and treating infectious diseases.

Learning Objectives: Microbiology and Laboratory Methods - Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of different laboratory methods in microbiology.
- Assess the impact of laboratory techniques on the accuracy and reliability of microorganism identification.
- Analyze the ethical considerations associated with laboratory testing in diagnosing and treating infectious diseases.
- Demonstrate understanding of the mechanisms of pathogenesis and host-pathogen interactions.

2. Synthesis:

- Propose improvements to existing laboratory methods in microbiology.
- Design a comprehensive laboratory testing protocol tailored to the specific needs of a healthcare organization.
- Create a plan for implementing and monitoring laboratory methods in diagnosing and treating infectious diseases.

3. Evaluation:

- Critically evaluate the effectiveness of laboratory methods in identifying microorganisms.
- Assess the impact of laboratory testing on patient outcomes and healthcare costs.
- Justify the importance of ongoing evaluation and refinement of laboratory methods in microbiology.

Learning Objectives: Microbiology and Laboratory Methods – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of laboratory methods in microbiology.
- Evaluate the effectiveness of different laboratory models and frameworks in the field.
- Assess the limitations and challenges of implementing advanced laboratory techniques in microbiology.

2. Synthesis:

- Integrate various theoretical perspectives on laboratory methods to develop a comprehensive framework for microbiology.
- Investigate the impact of microbiota on immune responses and disease development.
- Design a research study to investigate the relationship between laboratory methods and patient outcomes.
- Develop innovative strategies to overcome barriers to laboratory testing in the diagnosis and treatment of infectious diseases.

3. Creation:

- Generate a theoretical model incorporating laboratory methods as a central component of microbiology practices.
- Design and implement a comprehensive laboratory testing program for a healthcare organization.
- Contribute to advancing knowledge in the field by publishing research on the role of laboratory methods in microbiology.

Instructional Strategies: Microbiology and Laboratory Methods

Case Studies: Provide students with real-life scenarios or case studies related to laboratory methods in microbiology. Ask them to analyze the laboratory techniques used and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of laboratory methods.

Cooperative Learning: Divide students into small groups and assign different laboratory techniques. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to laboratory methods in microbiology. For example, organize laboratory sessions where students can practice performing microbiological tests. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and technical skills.

Flipped Classroom: Assign pre-recorded lectures or readings on laboratory methods in microbiology for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of the concepts.

Inquiry-Based Learning: Encourage students to explore specific topics within laboratory methods in microbiology through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based protocols. This strategy fosters curiosity, critical thinking, and independent learning in laboratory methods.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of laboratory methods in real time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific laboratory technique. Ask each group to become experts in their assigned technique and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different laboratory methods.

Peer Instruction: Incorporate peer-to-peer teaching and learning in laboratory methods. Divide students into pairs or small groups and ask them to teach their assigned technique to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require them to apply laboratory methods in microbiology. Ask them to analyze the situation, identify relevant techniques, and propose evidence-based solutions. Facilitate

discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires the application of laboratory methods in microbiology. For example, ask them to design and implement a laboratory testing protocol for a specific infectious disease. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying laboratory methods in microbiology. For example, simulate a laboratory setting where students perform microbiological tests and interpret the results. This strategy allows students to develop communication, problem-solving, and technical skills in the context of laboratory methods.

Service Learning: Engage students in service-learning projects that require laboratory methods in microbiology to inform evidence-based interventions or policy recommendations. Encourage students to apply their knowledge and skills to address current laboratory testing needs in collaboration with healthcare organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience in applying laboratory methods in microbiology. For example, simulate a laboratory testing process where students must make decisions based on test results. This strategy allows students to gain practical experience and develop critical thinking and technical skills in a controlled and interactive setting.

Socratic Method: Engage students in a dialogue-based approach to teaching laboratory methods in microbiology. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different techniques. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to laboratory methods in microbiology and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and come up with a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on laboratory methods.

Antimicrobial Stewardship is defined as practices dedicated to improving and optimizing antimicrobial use while minimizing harm and antimicrobial resistance. Content includes history and development of antimicrobials, use of antibiograms, and surveillance.

Learning Objectives: Antimicrobial Stewardship – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of antimicrobial stewardship in the context of improving and optimizing antimicrobial use.
- Identify the importance of antimicrobial stewardship in minimizing harm and antimicrobial resistance.
- Explain the history and development of antimicrobials and the role of antibiograms and surveillance in antimicrobial stewardship.

2. Comprehension:

- Summarize the fundamental principles and components of antimicrobial stewardship.
- Compare and contrast different approaches to antimicrobial stewardship.
- Interpret the impact of antimicrobial stewardship on patient outcomes and the global burden of antimicrobial resistance.

3. Application:

- Apply the principles of antimicrobial stewardship to real-life scenarios in healthcare settings.
- Analyze the effectiveness of different antimicrobial stewardship strategies in minimizing harm and antimicrobial resistance.
- Develop strategies to enhance antimicrobial stewardship practices in healthcare organizations.

Learning Objectives: Antimicrobial Stewardship – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing antimicrobial stewardship programs.
- Assess the impact of antimicrobial stewardship on patient safety and healthcare costs.
- Examine the ethical considerations associated with antimicrobial stewardship.

2. Synthesis:

- Propose improvements to existing antimicrobial stewardship approaches.
- Design an antimicrobial stewardship program tailored to the specific needs of a healthcare organization.
- Create a comprehensive plan for implementing and monitoring antimicrobial stewardship practices.

3. Evaluation:

- Critically evaluate the effectiveness of antimicrobial stewardship programs in minimizing harm and antimicrobial resistance.
- Assess the impact of antimicrobial stewardship on healthcare outcomes and resource utilization.
- Justify the importance of ongoing evaluation and refinement of antimicrobial stewardship practices.

Learning Objectives: Antimicrobial Stewardship – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of antimicrobial stewardship.
- Evaluate the effectiveness of different antimicrobial stewardship models and frameworks.
- Assess the limitations and challenges of implementing advanced antimicrobial stewardship strategies.

2. Synthesis:

- Integrate various theoretical perspectives on antimicrobial stewardship to develop a comprehensive framework.
- Design a research study to investigate the relationship between antimicrobial stewardship and patient outcomes.
- Develop innovative strategies to overcome barriers to antimicrobial stewardship in healthcare organizations.

3. Creation:

- Generate a theoretical model incorporating antimicrobial stewardship as a central component of healthcare practices.
- Design and implement a comprehensive antimicrobial stewardship program for a healthcare organization.
- Contribute to advancing knowledge in the field by publishing research on the role of antimicrobial stewardship in minimizing harm and antimicrobial resistance.

Instructional Strategies: Antimicrobial Stewardship

Role-Playing: Divide students into groups and assign them different roles, such as healthcare professionals, patients, or administrators. Create a scenario where infectious disease control is crucial, such as responding to a disease outbreak in a community. Ask students to act out their roles and demonstrate how to apply infectious disease control principles in such situations. This strategy promotes empathy, problem-solving, and decision-making skills.

Collaborative Projects: Assign students to collaborate and develop a comprehensive infection control plan for a specific healthcare setting. Each team can focus on a different aspect, such as hand hygiene protocols, isolation procedures, or environmental cleaning. Encourage them to research best practices, brainstorm ideas, and present their plans to the class. This strategy fosters teamwork, research skills, and practical application of knowledge.

Simulation Exercises: Use simulation technology or role-playing scenarios to create a realistic environment where students can practice applying infectious disease control measures. For example, simulate a hospital setting with a patient infected with a highly contagious disease and ask students to demonstrate proper infection control procedures to prevent transmission. This strategy allows students to gain hands-on experience and develop critical thinking and technical skills.

Debates: Organize debates on controversial topics related to IPC, such as mandatory vaccination or the use of antimicrobial agents. Assign students to argue for or against a particular viewpoint and encourage them to research and present evidence to support their arguments. This activity promotes critical thinking, research skills, and articulating and defending one's position.

Guest Speakers: Invite guest speakers who are experts in infectious disease control to share their knowledge and experiences with the students. This allows students to learn from practitioners and gain insights into the challenges and advancements in the field. Encourage students to ask questions and engage in discussions with the guest speakers.

Field Visits: Organize visits to healthcare organizations or public health agencies where infectious disease control measures are implemented. This allows students to observe and learn from professionals actively working in infectious disease control. Encourage students to reflect on their observations and discuss the effectiveness of the infection control measures they witnessed.

Group Projects: Assign students to work in groups and develop an awareness campaign on infectious disease control. Each group can choose a specific contagious disease or topic, such as hand hygiene, vaccination promotion, or vector-borne diseases. Ask students to create educational materials, such as posters or brochures, and plan outreach activities to raise awareness in the community. This project allows students to apply their knowledge and skills practically and collaboratively.

Technical Competency 8: Environment of Care is defined as the environment and environmental factors in which patient care is provided, with a focus on providing a safe, functional, and effective space. Includes IPC content related to construction and renovation, equipment, facility design and infrastructure, utilities and maintenance, and emergency management for air, water, and waste.

The check marks in the table below indicate examples of the content expected to be included in this competency for each program level.

Topic	Environment of Care			
Content	Sub-content	Undergraduate	Certificate	Graduate
General Content	Definition of EOC and basic principles	✓	✓	✓
	EOC survey tools and techniques	✓		✓
	Regulatory requirements and resources	✓	✓	✓
	How EOC impacts infection prevention	✓	✓	✓
	Quality assurance techniques and indicators	✓		✓
Construction	Overview of infection prevention during construction (i.e., design components to support the IP)	✓	✓	✓
	ICRA	✓	✓	✓
Facilities Management: Air, water, and waste	Air quality	✓	✓	✓
	Common air microbes that impact IPC	✓	✓	✓
	Overview of HVAC in healthcare	✓	✓	✓
	Overview of medical waste	✓	✓	✓
	Water disposal & processing	✓		✓
	Overview of water management in healthcare settings	✓		✓
	Common water microbes that impact IPC	✓	✓	✓
	IPC's role in Water Management Planning	✓		✓
	Water treatment basics	✓		✓

Learning Objectives: Environment of Care – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of the environment of care and its importance in providing a safe and effective space for patient care.
- Identify key environmental factors that impact patient safety and the delivery of care.
- Define the key components of the environment of care, such as construction and renovation, equipment, facility design, infrastructure, utilities, maintenance, and emergency management.

2. Comprehension:

- Explain the impact of the environment of care on patient safety, quality of care, and healthcare outcomes.
- Analyze the relationship between IPC and the environment of care.
- Discuss the regulatory and accreditation standards related to the environment of care.

3. Application:

- Apply the principles of the environment of care to realistic scenarios in healthcare settings.
- Analyze the effectiveness of different strategies for managing construction and renovation, equipment, facility design and infrastructure, utilities and maintenance, and emergency management to ensure a safe and functional environment of care.
- Develop strategies to enhance the management of the environment of care in healthcare organizations.

Learning Objectives: Environment of Care – Certificate Level

1. Analysis:

- Evaluate the complex interplay among environmental factors, patient safety, and healthcare outcomes in the environment of care.
- Analyze the impact of emerging technologies and innovations on managing the environment of care.
- Assess the role of leadership and governance in promoting a safe, functional, and effective environment of care.

2. Synthesis:

- Develop innovative approaches and interventions based on the principles of the environment of care to address complex challenges.
- Foster collaboration and partnerships to promote sustainability and environmental stewardship in the environment of care at local, national, and global levels.

- Integrate environmental management principles into organizational strategies and practices.

3. Evaluation:

- Critically evaluate the effectiveness and sustainability of interventions in the environment of care, considering ethical, cultural, and global perspectives.
- Assess the impact of environmental management efforts on patient safety, quality improvement, and sustainability.
- Advocate for systemic change and policy reform to advance the environment of care.

Learning Objectives: Environment of Care – Graduate Level

1. Analysis:

- Evaluate the complex interplay among environmental factors, patient safety, quality improvement, and healthcare outcomes in diverse healthcare settings.
- Analyze the impact of environmental sustainability initiatives on managing the environment of care.
- Assess the role of policy and legislation in promoting a safe, functional, and effective environment of care.

2. Synthesis:

- Develop innovative approaches and interventions based on the principles of the environment of care to address complex challenges in diverse healthcare systems.
- Foster collaboration and partnerships to promote sustainability and environmental stewardship in the environment of care at local, national, and global levels.
- Integrate environmental management principles into organizational strategies and practices to drive system-wide change.

3. Evaluation:

- Critically evaluate the effectiveness and sustainability of interventions in the environment of care, considering ethical, cultural, and global perspectives.
- Assess the impact of environmental management efforts on patient safety, quality improvement, sustainability, and healthcare equity.
- Advocate for systemic change and policy reform to advance the environment of care and promote health equity.

4. Creation:

- Generate innovative ideas and solutions to improve the environment of care and enhance patient safety, quality improvement, and healthcare outcomes.
- Design and develop environmental sustainability initiatives that effectively manage the environment of care.

- Create policies and legislation that promote a safe, functional, and effective environment of care and support sustainability efforts in IPC.

Instructional Strategies: Environment of Care

Case Studies: Present real or hypothetical scenarios that require students to analyze and apply principles related to the environment of care while addressing challenges and constraints related to implementation.

Cooperative Learning: Assign group projects or discussions where students work together to explore and solve problems related to the environment of care using different perspectives and experiences in healthcare settings.

Experiential Learning: Engage students in hands-on activities, simulations, or role-plays that allow them to experience and reflect on applying environment of care principles in various healthcare contexts.

Flipped Classroom: Provide pre-recorded lectures or readings for students to review before class and use class time for interactive discussions, problem-solving activities, or case analysis related to the environment of care in healthcare settings.

Gallery Walks: Set up stations that present scenarios with different challenges in creating an effective environment of care in healthcare settings. Have students rotate and discuss the key elements and implications at each station.

Inquiry-Based Learning: Encourage students to explore and investigate environment of care issues in healthcare settings using their own research questions, guided by the principles of the environment of care.

Interactive Lectures with Technology: Incorporate interactive elements such as online quizzes, polls, or multimedia resources in lectures to engage students and reinforce their understanding of environment of care concepts in healthcare settings.

Jigsaw: Divide students into expert groups to study specific environment of care policies and principles, and then reorganize them into mixed groups to share their expertise and collaborate on analyzing and solving problems in healthcare settings.

Peer Instruction: Facilitate peer discussions and debates on environment of care policy and principles and their application, promoting active learning and deeper understanding in healthcare settings.

Problem-Based Learning: Present students with realistic, complex problems related to the environment of care in healthcare settings and guide them in using environment of care policy and principles to develop solutions and strategies.

Project-Based Learning: Assign long-term projects that require students to apply environment of care principles and methodologies to design and implement initiatives to create safe and effective spaces for patient care.

Role-Play Simulations: Organize role-play scenarios where students take on different roles and apply environment of care principles to address challenges in realistic healthcare settings.

Simulation Scenarios: Use computer-based simulations or virtual environments to simulate environment of care challenges in healthcare settings, allowing students to practice applying environment of care policies, principles, and strategies.

Socratic Method: Facilitate class discussions by asking thought-provoking questions that encourage critical thinking and a deeper understanding of environment of care concepts in healthcare settings.

Think-Pair-Share: Ask students to individually reflect on and generate ideas related to challenges surrounding environment of care in healthcare settings, then pair them up to discuss and share their thoughts with each other and the class.

Technical Competency 9: Research Design and Evaluation

The check marks in the table below indicate examples of the content expected to be included in this competency for each program level. Please note this table includes topics across all the areas within Research Design and evaluation including Basics of Research Design and Critical Evaluation of Research. Each area's definition, learning objectives, and instructional strategies are grouped and presented below the Topic table.

Topic	Research Design and Evaluation			
Content	Sub-content	Undergraduate	Certificate	Graduate
Literature Review and Evaluation	Critique of research articles	✓	✓	✓
	Principles of a literature review	✓	✓	✓
Analyzing study design		✓		✓
Conducting effective research studies				✓
Types of study design (e.g., hierarchy of evidence triangle)		✓	✓	✓
Correlation, causation, and causal inference		✓	✓	✓
IP role in research		✓	✓	✓
Statistical methodologies used in research		✓		✓
Assessment and survey design		✓		✓

Topic	Research Design and Evaluation			
Content	Sub-content	Undergraduate	Certificate	Graduate
Translating and using evidence-based practice and research		✓	✓	✓

Basics of Research Design is defined as understanding key elements of research such as types of study design, assessment and survey design, authorship guidelines, research collaboration, statistical methodologies used in research, understanding research funding, and ethics and responsible conduct of research.

Learning Objectives: Basics of Research Design – Undergraduate Level:

1. Knowledge/Remember:

- Define the key elements of research design, including study types, assessment, survey design, authorship guidelines, research collaboration, statistical methodologies, research funding, ethics, and responsible research conduct.
- Identify the importance of understanding research design in conducting valid and reliable research.
- Explain the basic principles and concepts of research design in different disciplines.

2. Comprehension:

- Summarize the fundamental principles and components of different types of study design, assessment and survey design, authorship guidelines, research collaboration, statistical methodologies, research funding, and ethics in research.
- Compare and contrast different approaches to research design in various fields of study.
- Interpret the impact of research design on the validity and reliability of research findings.

3. Application:

- Apply the principles of research design to real-life research scenarios.
- Analyze the effectiveness of different study designs, assessment and survey designs, statistical methodologies, and ethical considerations in research.
- Develop strategies to enhance research design in different research projects.

Learning Objectives: Basics of Research Design – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of different study types, assessment, survey design, statistical methodologies, and ethical guidelines in research.

- Assess the impact of research collaboration and funding on the quality and outcomes of research.
- Analyze the ethical considerations associated with research design and responsible conduct of research.

2. Synthesis:

- Propose improvements to existing research design approaches in different disciplines.
- Design a comprehensive research project incorporating appropriate study, assessment, survey design, statistical methodologies, and ethical considerations.
- Create a plan for implementing and monitoring research collaboration and funding strategies.

3. Evaluation:

- Critically evaluate the effectiveness of different research design approaches in generating valid and reliable research findings.
- Assess the impact of research collaboration and funding on advancing knowledge in different fields.
- Justify the importance of ongoing research design evaluation and refinement in ensuring research integrity.

Learning Objectives: Basics of Research Design – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of research design in different disciplines.
- Evaluate the effectiveness of different research design models and frameworks.
- Assess the limitations and challenges of implementing advanced research design approaches.

2. Synthesis:

- Integrate various theoretical perspectives on research design to develop a comprehensive framework.
- Design a research study incorporating advanced study design, assessment and survey design, statistical methodologies, and ethical considerations.
- Develop innovative strategies to overcome barriers to research collaboration and funding.

3. Creation:

- Generate a theoretical model incorporating research design as a central component of research practices.
- Design and implement a comprehensive research design training program for researchers.

- Contribute to advancing knowledge in the field by publishing research on the role of research design in different disciplines.

Instructional Strategies: Basics of Research Design

Case Studies: Provide students with real-life research scenarios or case studies that require the application of research design principles. Ask them to analyze the design elements, identify strengths and weaknesses, and propose appropriate modifications. Encourage group discussions and critical thinking to enhance their understanding and application of research design.

Cooperative Learning: Divide students into small groups and assign them different research design topics, such as study design, statistical methodologies, or ethical considerations. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of research design knowledge.

Problem-Based Learning: Present students with a research problem or question that requires the application of research design principles. Ask them to work individually or in small groups to develop a research plan, including study design, data collection methods, and ethical considerations. Facilitate discussions and guide as needed to support students' learning and application of research design.

Role-Play Simulations: Create role-play scenarios where students can take on the role of researchers and practice applying research design principles. For example, simulate a research collaboration meeting where students negotiate study design, data collection methods, and ethical considerations. This strategy allows students to develop communication, negotiation, and problem-solving skills in the context of research design.

Simulation Scenarios: Use simulation technology or virtual research environments to provide students hands-on experience applying research design principles. For example, simulate a data collection process in which students must make decisions about study design and data analysis. This strategy allows students to gain practical experience and develop critical thinking and technical skills in research design.

Socratic Method: Engage students in a dialogue-based approach to teaching research design. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different research design approaches. This strategy promotes active learning, reflection, and a deeper understanding of research design principles.

Think-Pair-Share: Pose a research design question or scenario to the class and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on research design.

Project-Based Learning: Assign students to work on a research project that requires the application of research design principles. Ask them to develop a research proposal, including study design, data collection methods, and ethical considerations. Provide guidance and feedback throughout the project to support students' learning and application of research design.

Experiential Learning: Provide opportunities for students to engage in hands-on research experiences, such as conducting surveys, analyzing data, or participating in research collaborations. This allows students to apply research design principles in applied settings and gain practical skills and knowledge.

Flipped Classroom: Assign pre-recorded lectures or readings on research design principles for students to review outside class. Use class time for interactive activities, such as case studies, group discussions, or problem-solving exercises, where students can apply and reinforce their understanding of research design.

Gallery Walks: Create stations around the classroom with different research design topics or case studies. Divide students into small groups and assign each group to a station. Ask students to rotate through the stations, discuss the materials, and provide feedback or insights. This strategy promotes active engagement, collaboration, and exposure to various research design concepts.

Inquiry-Based Learning: Encourage students to explore research design topics of interest through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop research plans. This strategy fosters curiosity, critical thinking, and independent learning in research design.

Peer Instruction: Incorporate peer-to-peer teaching and learning in research design. Divide students into pairs or small groups and assign each group a research design topic. Ask students to teach their assigned topic to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of research design concepts.

Service Learning: Engage students in research projects that address current problems or contribute to the community. Encourage students to apply research design principles to design and conduct research that has a practical impact. This strategy promotes civic engagement, critical thinking, and the application of research design in a meaningful context.

Critical Evaluation of Research is defined as the essential concepts on how to evaluate research including interpreting complex statistical methodologies, analyzing study design, and literature review.

Learning Objectives: Critical Evaluation of Research – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of critical evaluation of research and its importance in evidence-based practice.
- Identify key components of research studies, such as study design, statistical methodologies, and literature review.
- Explain the basic principles and concepts of interpreting complex statistical methodologies in research.

2. Comprehension:

- Summarize the key principles and components of critical evaluation of research.
- Compare and contrast different study designs and statistical methodologies used in research.
- Interpret the impact of literature review in understanding the current state of knowledge in a specific field.

3. Application:

- Apply the principles of critical evaluation of research to real-life research scenarios.
- Analyze the effectiveness of different study designs and statistical methodologies in research.
- Develop strategies to enhance critical evaluation skills in interpreting complex statistical methodologies and literature reviews.

Learning Objectives: Critical Evaluation of Research – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of research studies based on their study design and statistical methodologies.
- Assess the impact of literature review on the validity and reliability of research findings.
- Analyze the ethical considerations associated with critical evaluation of research.

2. Synthesis:

- Propose improvements to existing research designs and statistical methodologies to enhance the validity and reliability of research findings.
- Design a comprehensive literature review process tailored to the specific needs of a research project.

- Create a plan for implementing and monitoring critical evaluation practices in research.

3. Evaluation:

- Critically evaluate the effectiveness of different study designs and statistical methodologies in generating valid and reliable research findings.
- Assess the impact of literature review on advancing knowledge in a specific field.
- Justify the importance of ongoing evaluation and refinement of critical evaluation practices in research.

Learning Objectives: Critical Evaluation of Research – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of critical evaluation of research.
- Evaluate the effectiveness of different research design models and statistical methodologies.
- Assess the limitations and challenges of implementing advanced critical evaluation strategies.

2. Synthesis:

- Integrate various theoretical perspectives on critical evaluation to develop a comprehensive framework for research.
- Design a research study to investigate the relationship between study design, statistical methodologies, and research outcomes.
- Develop innovative strategies to overcome barriers to critical evaluation in research.

3. Creation:

- Generate a theoretical model incorporating critical evaluation as a central component of research practices.
- Design and implement a comprehensive critical evaluation training program for researchers.
- Contribute to advancing knowledge in the field by publishing research on the role of critical evaluation in research.

Instructional Strategies: Critical Evaluation of Research

Case Studies: Provide students with real-life research studies or case studies and ask them to critically evaluate the study design, statistical methodologies, and literature review.

Cooperative Learning: Divide students into small groups and assign them different research studies to analyze. Ask each group to present their findings and engage in group discussions to enhance their understanding of critical evaluation principles.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences, such as conducting their own research studies or analyzing existing research studies. This allows students to apply theoretical knowledge in a practical context and develop critical evaluation skills.

Flipped Classroom: Assign pre-recorded lectures or readings on critical evaluation for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of critical evaluation concepts.

Inquiry-Based Learning: Encourage students to explore specific research topics of interest through self-directed inquiry. Provide resources and guidance for students to conduct their own critical evaluation of research studies and develop evidence-based conclusions.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of critical evaluation in real-time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of critical evaluation, such as study design, statistical methodologies, or literature review. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different aspects of critical evaluation.

Peer Instruction: Incorporate peer-to-peer teaching and learning in critical evaluation. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic research problems or case scenarios that require critical evaluation. Ask them to analyze the research study, identify strengths and weaknesses, and propose evidence-based recommendations. Facilitate discussions and guide as needed to support students' learning and application of critical evaluation.

Project-Based Learning: Assign students to work on a research project that requires critical evaluation of existing research studies. Ask them to critically analyze the study design, statistical methodologies, and literature review to inform their research projects. Provide guidance and feedback throughout the project to support students' learning and application of critical evaluation.

Role-Play Simulations: Create role-play scenarios where students can practice applying critical evaluation principles. For example, simulate a research conference where students must critically evaluate research presentations and discuss with other participants. This strategy allows students to develop communication, critical thinking, and problem-solving skills in the context of critical evaluation.

Service Learning: Engage students in service-learning projects requiring critical research studies evaluation to inform evidence-based interventions or policy recommendations. Encourage students to apply their knowledge and skills to address current research needs in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students hands-on experience applying critical evaluation principles. For example, simulate a research study in which students must critically analyze the study design, statistical methodologies, and literature review to make evidence-based conclusions. This strategy allows students to gain practical experience and develop critical evaluation skills in a controlled and interactive setting.

Socratic Method: Use a dialogue-based approach to teaching critical evaluation. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different research studies. This strategy promotes active learning, reflection, and a deeper understanding of critical evaluation concepts.

Think-Pair-Share: Pose a question or scenario related to critical evaluation and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on critical evaluation.

Technical Competency 10: Behavioral Science

The check marks in the table below indicate examples of the content expected to be included in this competency for each program level. Please note this table includes topics across all the areas within Behavioral Science including Behavioral Science and Implementation and Dissemination Science. Each area's definition, learning objectives, and instructional strategies are grouped and presented below the Topic table.

Topic		Behavioral Science		
Content	Sub-content	Undergraduate	Certificate	Graduate
Change Management	Leadership	✓	✓	✓
Health behavior theory		✓	✓	✓
Dissemination and implementation models in health research and practice		✓		✓

Behavioral Science is defined as covering the topics of change management and health behavior theories.

Learning Objectives: Behavioral Science – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of change management and its importance in behavioral science.
- Identify key health behavior theories and their relevance to understanding human behavior.
- Explain the basic principles and components of change management and health behavior theories.

2. Comprehension:

- Summarize the fundamental principles and components of different change management strategies.
- Compare and contrast different health behavior theories and their applications.
- Interpret the impact of change management and health behavior theories on individual and community health outcomes.

3. Application:

- Apply change management principles to real-life scenarios in behavioral science.
- Analyze the effectiveness of different health behavior theories in promoting behavior change.
- Develop strategies to enhance change management and apply health behavior theories in behavioral science practices.

Learning Objectives: Behavioral Science – Certificate Level

1. Analysis:

- Evaluate the effectiveness of different change management models and health behavior theories in diverse contexts.

2. Synthesis:

- Develop innovative approaches and interventions based on behavioral science principles to address complex challenges in change management and health behavior.

3. Evaluation:

- Critically evaluate the outcomes and impact of behavioral science interventions in change management and health behavior, considering ethical considerations and cultural diversity.

Learning Objectives: Behavioral Science – Graduate Level

1. Analysis:
 - Evaluate the complex interplay among individual, social, and environmental factors influencing change management and health behavior outcomes.
2. Synthesis:
 - Develop comprehensive and integrated approaches to address complex challenges in change management and health behavior, incorporating interdisciplinary perspectives.
3. Evaluation:
 - Critically evaluate the effectiveness and sustainability of behavioral science interventions in change management and health behavior, considering ethical, cultural, and global perspectives.
4. Create:
 - Generate a new health behavior theory based on existing research and evidence, addressing a specific population or IPC issue. At the graduate level, students can demonstrate their ability to think critically and creatively by developing innovative theories that contribute to the field of IPC.

Instructional Strategies: Behavioral Science

Case Studies: Provide students real-life scenarios or case studies related to change management and health behavior theories. Ask them to analyze the behavioral aspects of each case and propose appropriate change management strategies. Encourage group discussions and critical thinking to enhance their understanding of change management principles and health behavior theories.

Cooperative Learning: Divide students into small groups and assign them different health behavior theories. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to change management and health behavior theories. For example, ask students to design and implement a behavior change intervention in a community setting. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on change management and health behavior theories for students to review outside class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of the concepts.

Inquiry-Based Learning: Encourage students to explore specific topics within change management and health behavior theories through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based interventions. This strategy fosters curiosity, critical thinking, and independent learning in behavioral science.

Interactive Lectures with Technology: Use tools like polling software or online discussion boards to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of change management and health behavior theories in real-time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific health behavior theory. Ask each group to become experts in their assigned theory and then reassemble the groups to share their knowledge. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different health behavior theories.

Peer Instruction: Incorporate peer-to-peer teaching and learning in change management and health behavior theories. Divide students into pairs or small groups and ask them to teach their assigned theory to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of change management and health behavior theories. Ask them to analyze the situation, identify relevant theories, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires them to apply change management and health behavior theories. For example, ask them to design and implement a behavior change campaign targeting a specific health issue. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying change management and health behavior theories. For example, simulate a counseling session where students must apply motivational interviewing techniques to promote behavior change. This strategy allows students to develop communication, empathy, and problem-solving skills in the context of behavioral science.

Service Learning: Engage students in service-learning projects that address current behavioral issues. Encourage students to apply change management and health behavior theories to design and implement interventions in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience applying change management and health behavior theories. For example, simulate a behavior change intervention in a virtual community and ask students to make decisions based on theoretical principles. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in behavioral science.

Socratic Method: Use a dialogue-based approach to teaching change management and health behavior theories. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different theories and strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to change management or health behavior theories and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and sharing of diverse perspectives.

Implementation and Dissemination Science is defined as understanding key elements of implementation and dissemination science including dissemination and implementation models in health research and practice; designing, implementing, and evaluating quality improvement (QI) initiatives; developing metrics for QI; translating and using evidence-based practice and research; and approaches to disseminating research.

Learning Objectives: Implementation and Dissemination Science – Undergraduate Level

1. Knowledge/Remember:

- Define the concept of implementation and dissemination of science in the context of health research and practice.
- Identify key models of dissemination and implementation in health research and practice.
- Explain the importance of evidence-based practice and research.

2. Comprehension:

- Summarize the key principles and components of quality improvement initiatives in implementation and dissemination science.
- Compare and contrast different approaches to translating and using evidence-based practice and research.
- Interpret the impact of dissemination strategies on adopting and implementing evidence-based practices.

3. Application:

- Apply the principles of implementation and dissemination science to real-life scenarios in health research and practice.

- Analyze the effectiveness of different quality improvement initiatives in promoting evidence-based practices.
- Develop strategies to enhance the translation and use of evidence-based practice and research in healthcare settings.

Learning Objectives: Implementation and Dissemination Science – Certificate Level

1. Application:

- Apply advanced implementation and dissemination science principles to complex and multifaceted real-life scenarios in health research and practice, considering ethical and cultural implications.
- Design and lead innovative and impactful quality improvement initiatives to promote evidence-based practices, considering organizational and systemic factors.
- Develop comprehensive and strategic plans to facilitate the translation and use of evidence-based practice and research in healthcare settings, considering sustainability and scalability.

2. Analyzing:

- Analyze the effectiveness of different dissemination and implementation models in achieving desired outcomes in health research and practice.
- Evaluate the impact of quality improvement (QI) initiatives on healthcare outcomes.
- Critically assess the strengths and weaknesses of different approaches to disseminating research.

Learning Objectives: Implementation and Dissemination Science – Graduate Level

1. Evaluation:

- Evaluate the success and sustainability of implementation and dissemination strategies in achieving desired outcomes.
- Assess the effectiveness of metrics used in IPC improvement initiatives.
- Critically evaluate the impact of evidence-based practice and research on implementation and dissemination science.

2. Creation:

- Develop dissemination strategies to address specific IPC challenges.
- Create metrics and evaluation frameworks for assessing the impact of QI initiatives.
- Propose new approaches to disseminating research that promote wider adoption and utilization.

Instructional Strategies: Implementation and Dissemination Science

Case Studies: Analyze and discuss real-life implementation and dissemination of science scenarios, applying theoretical concepts to practical situations.

Cooperative Learning: Collaborate with peers to solve implementation and dissemination science problems, fostering teamwork and shared learning.

Experiential Learning: Engage in hands-on activities and simulations to gain practical experience in implementation and dissemination science.

Flipped Classroom: Pre-read and watch videos on implementing and disseminating science concepts and use class time for discussions and application.

Gallery Walks: Explore and analyze visual representations of implementation and dissemination of science models and strategies, promoting active learning and reflection.

Inquiry-Based Learning: Investigate and explore the implementation and dissemination of science topics through research and self-directed learning, fostering critical thinking and problem-solving skills.

Interactive Lectures with Technology: Participate in interactive lectures using technology tools to enhance engagement and understanding of implementation and dissemination of science concepts.

Jigsaw: Collaborate in small groups to research and become experts on specific implementation and dissemination science topics, then share knowledge with the larger group.

Peer Instruction: Engage in peer-led discussions and activities to deepen understanding of implementation and dissemination of science concepts.

Problem-Based Learning: Solve complex implementation and dissemination of science problems through active inquiry, critical thinking, and collaboration.

Project-Based Learning: Undertake in-depth implementation and dissemination of science projects, applying knowledge and skills to realistic scenarios.

Role-Play Simulations: Act out implementation and dissemination science scenarios, practicing decision-making and communication skills in a simulated environment.

Service Learning: Apply implementation and dissemination of science knowledge and skills to community projects, making a positive impact.

Simulation Scenarios: Participate in simulated implementation and dissemination science scenarios, practicing decision-making and problem-solving skills in a controlled environment.

Socratic Method: Engage in guided questioning and dialogue to explore the implementation and dissemination of science concepts and deepen understanding.

Think-Pair-Share: Reflect on the implementation and dissemination of science concepts individually, discuss with a partner, and share insights with the larger group, promoting active learning and collaboration.

Behavioral Competency 1: Accountability is defined as ensuring the quality and completion of work tasks and taking ownership over processes.

Learning Objectives: Accountability – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of accountability in the context of infection prevention and control.
- Identify the importance of accountability in promoting quality and completion of work tasks.
- Explain the role of taking ownership of infection prevention and control processes.

2. Comprehension:

- Summarize the key principles and components of infection prevention and control accountability.
- Compare and contrast different approaches to ensuring quality and completion of work tasks.
- Interpret the impact of taking ownership over processes on infection prevention and control outcomes.

3. Application:

- Apply the principles of accountability to real-life scenarios in infection prevention and control.
- Analyze the effectiveness of different strategies for ensuring quality and completion of work tasks.
- Develop strategies to enhance accountability in infection prevention and control practices.

Learning Objectives: Accountability – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing accountability strategies in infection prevention and control.
- Assess the impact of accountability on the quality and completion of work tasks in healthcare settings.
- Analyze the ethical considerations associated with accountability in infection prevention and control.

2. Synthesis:

- Propose improvements to existing accountability approaches in infection prevention and control.
- Design a comprehensive accountability program tailored to the specific needs of a healthcare organization.
- Create a plan for implementing and monitoring infection prevention and control accountability practices.

3. Evaluation:

- Critically evaluate the effectiveness of accountability in ensuring quality and completion of work tasks in infection prevention and control.
- Assess the impact of accountability on patient outcomes and healthcare costs.
- Justify the importance of ongoing evaluation and refinement of accountability strategies in infection prevention and control.

Learning Objectives: Accountability – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of accountability in infection prevention and control.
- Evaluate the effectiveness of different accountability models and frameworks in the field.
- Assess the limitations and challenges of implementing advanced accountability strategies in infection prevention and control practices.

2. Synthesis:

- Integrate various theoretical perspectives on accountability to develop a comprehensive infection prevention and control framework.
- Design a research study to investigate the impact of accountability on infection prevention and control outcomes.
- Develop innovative strategies to overcome barriers to accountability in infection prevention and control.

3. Creation:

- Generate a theoretical model incorporating accountability as central to infection prevention and control practices.
- Design and implement a comprehensive accountability program focused on infection prevention and control for a healthcare organization.
- Contribute to advancing knowledge in the field by publishing research on the role of accountability in infection prevention and control.

Instructional Strategies: Accountability

Case Studies: Provide students with real-life scenarios or case studies related to accountability in infection prevention and control. Ask them to analyze the accountability aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of accountability principles.

Cooperative Learning: Divide students into small groups and assign them different roles, such as healthcare professionals, administrators, or patients. Create a scenario where accountability is crucial, such as ensuring compliance with infection prevention and control protocols. Ask students to work together to demonstrate how accountability should be practiced in such situations. This strategy promotes teamwork, problem-solving, and decision-making skills.

Experiential Learning: Provide students with hands-on experiences related to infection prevention and control accountability. For example, organize visits to healthcare organizations where students can observe and participate in accountability practices. This allows students to apply theoretical knowledge practically and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on accountability in infection prevention and control for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of accountability concepts.

Inquiry-Based Learning: Encourage students to explore specific topics within accountability through self-directed inquiry. Provide resources and guidance for students to conduct research, formulate research questions, and develop evidence-based strategies. This strategy fosters curiosity, critical thinking, and independent learning in accountability.

Interactive Lectures with Technology: Use tools like polling software or online discussion boards to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of accountability in real time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific accountability aspect in infection prevention and control. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different aspects of accountability.

Peer Instruction: Incorporate peer-to-peer teaching and learning in accountability. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of accountability principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires the application of accountability principles. For example, ask them to design and implement an accountability program for a healthcare organization. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying accountability principles. For example, simulate a team meeting where students must address accountability issues in infection prevention and control. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of accountability.

Service Learning: Engage students in service-learning projects that address current accountability challenges in infection prevention and control. Encourage students to apply their knowledge and skills to promote accountability in collaboration with healthcare organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience applying accountability principles. For example, simulate a healthcare setting where students must make decisions about accountability practices in infection prevention and control. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Use a dialogue-based approach to teaching accountability. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different accountability strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to accountability and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and sharing of diverse perspectives on accountability.

Behavioral Competency 2: Advocacy is defined as the understanding of advocating for IPC programs, regulatory and legislative advocacy (state, local, regional, and national), and types of advocacy. It also encompasses advocating for one's own professional needs, rights, and interests.

Learning Objectives: Advocacy – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of advocacy in the context of infection prevention and control.
- Identify the importance of advocacy in promoting IPC programs and influencing regulatory and legislative decisions.
- Explain different types of advocacy relevant to infection prevention and control.

2. Comprehension:

- Summarize the fundamental principles and components of effective infection prevention and control advocacy.
- Compare and contrast different approaches to advocacy in infection prevention and control.
- Interpret the impact of advocacy on developing and implementing infection prevention and control policies and programs.

3. Application:

- Apply advocacy principles to real-life scenarios in infection prevention and control.
- Analyze the effectiveness of advocacy efforts in influencing regulatory and legislative decisions related to infection prevention and control.
- Develop strategies to enhance advocacy for IPC programs and policies.

Learning Objectives: Advocacy – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing advocacy strategies in infection prevention and control.
- Assess the impact of advocacy on implementing and enforcing infection prevention and control regulations.
- Examine the ethical considerations associated with advocacy in infection prevention and control.

2. Synthesis:

- Propose improvements to existing advocacy approaches in infection prevention and control.
- Design an advocacy plan tailored to promote specific IPC programs or policies.
- Create a comprehensive plan for implementing and monitoring advocacy efforts in infection prevention and control practices.

3. Evaluation:

- Critically evaluate the effectiveness of advocacy in influencing policy changes and improving infection prevention and control outcomes.
- Assess the impact of advocacy on the engagement and empowerment of healthcare professionals in infection prevention and control.
- Justify the importance of ongoing evaluation and refinement of advocacy strategies in infection prevention and control.

Learning Objectives: Advocacy – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of advocacy in infection prevention and control.
- Evaluate the effectiveness of different advocacy models and frameworks in the field.
- Assess the limitations and challenges of implementing advocacy measures in infection prevention and control practices.

3. Creation:

- Generate a theoretical model incorporating advocacy as a central component of infection prevention and control practices.
- Design and implement a comprehensive advocacy program focused on infection prevention and control for a healthcare organization.
- Contribute to advancing knowledge in the field by publishing research on the role of advocacy in infection prevention and control.

Instructional Strategies: Advocacy

Case Studies: Provide students with real-life scenarios or case studies related to infection prevention and control advocacy. Ask them to analyze the advocacy aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of advocacy principles.

Role-Play Simulations: Divide students into groups and assign them different roles, such as healthcare professionals, policymakers, or patient advocates. Create a scenario where advocacy is crucial, such as advocating for implementing specific infection prevention and control policies. Ask students to act out their roles and demonstrate how advocacy should be practiced in such situations. This strategy promotes empathy, problem-solving, and decision-making skills.

Collaborative Projects: Assign students to work in teams and develop an advocacy plan for a specific infection prevention and control program or policy. Each team can focus on a different aspect, such as stakeholder engagement, communication strategies, or policy analysis. Encourage them to research best practices, brainstorm ideas, and

present their plans to the class. This strategy fosters teamwork, research skills, and practical application of knowledge.

Debates: Organize debates on controversial infection prevention and control advocacy topics. Assign students to argue for or against a particular viewpoint and encourage them to research and present evidence to support their arguments. This activity promotes critical thinking, research skills, and articulating and defending one's position.

Guest Speakers: Invite guest speakers with experience in infection prevention and control advocacy to share their insights and experiences with the students. This allows students to learn from practitioners and gain a deeper understanding of the challenges and opportunities in the field. Encourage students to ask questions and engage in discussions with the guest speakers.

Field Visits: Organize visits to healthcare organizations or community settings where infection prevention and control advocacy efforts are implemented. This allows students to observe advocacy in action and understand the practical aspects of implementing advocacy strategies. Encourage students to reflect on their observations and discuss the effectiveness of the advocacy efforts they witnessed.

Group Projects: Assign students to work in groups and develop an advocacy campaign for a specific infection prevention and control issue. Each group can choose a different topic, such as hand hygiene, vaccination promotion, or antimicrobial stewardship. Ask students to create a comprehensive advocacy plan, including strategies for raising awareness, engaging stakeholders, and influencing policy. This project allows students to apply their knowledge and skills practically and collaboratively.

Behavioral Competency 3: Analytical Skills are defined as collecting, analyzing, interpreting, and presenting data or other information to accomplish research goals and find solutions to problems.

Learning Objectives: Analytical Skills – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of analytical skills in the context of research and problem-solving.
- Identify the importance of analytical skills in collecting, analyzing, interpreting, and presenting data.
- Explain the role of analytical skills in achieving research goals and finding solutions to problems.

2. Comprehension:

- Summarize the fundamental principles and components of analytical skills in research and problem-solving.
- Compare and contrast different approaches to developing and applying analytical skills.

- Interpret the impact of analytical skills on the quality and reliability of research findings and problem-solving outcomes.

3. Application:

- Apply analytical skills to real-life scenarios in research and problem-solving.
- Analyze the effectiveness of different analytical techniques and tools in data analysis and interpretation.
- Develop strategies to enhance analytical skills in research and problem-solving practices.

Learning Objectives: Analytical Skills – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing analytical frameworks and methods.
- Assess the impact of analytical skills on the validity and generalizability of research findings and problem-solving solutions.
- Analyze the ethical considerations associated with using analytical skills in research and problem-solving.

2. Synthesis:

- Propose improvements to existing analytical approaches in research and problem-solving.
- Design a comprehensive research study or problem-solving project incorporating advanced analytical techniques.
- Create a comprehensive plan for implementing and monitoring analytical skills in research and problem-solving practices.

3. Evaluation:

- Critically evaluate the effectiveness of analytical skills in generating reliable research findings and effective problem-solving solutions.
- Assess the impact of analytical skills on decision-making processes in research and problem-solving.
- Justify the importance of ongoing evaluation and refinement of analytical skills in research and problem-solving.

Learning Objectives: Analytical Skills – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of analytical skills in research and problem-solving.
- Evaluate the effectiveness of different analytical models and frameworks in the field.

- Assess the limitations and challenges of implementing advanced analytical techniques in research and problem-solving practices.

2. Synthesis:

- Integrate various theoretical perspectives on analytical skills to develop a comprehensive framework for research and problem-solving.
- Design a research study or problem-solving project incorporating multiple advanced analytical techniques.
- Develop innovative strategies to overcome barriers to developing and applying analytical skills in research and problem-solving.

3. Creation:

- Generate a theoretical model incorporating analytical skills as a central component of research and problem-solving practices.
- Design and implement a comprehensive training program for researchers and problem-solvers focused on developing and enhancing analytical skills.
- Contribute to advancing knowledge in the field by publishing research on the role of analytical skills in research and problem-solving.

Instructional Strategies: Analytical Skills

Case Studies: Provide students with real-life scenarios or case studies related to analytical skills in research and problem-solving. Ask them to analyze the analytical aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of analytical skills.

Cooperative Learning: Divide students into small groups and assign them different analytical topics, such as statistical methodologies or data analysis techniques. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of analytical skills.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to analytical skills in research and problem-solving. For example, organize research projects or problem-solving exercises where students can apply analytical techniques and tools. This allows students to apply theoretical knowledge practically and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on analytical skills in research and problem-solving for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or data analysis exercises, where students can apply and reinforce their understanding of analytical skills.

Inquiry-Based Learning: Encourage students to explore specific topics related to analytical skills through self-directed inquiry. Provide resources and guidance for

students to conduct research, formulate research questions, and develop evidence-based strategies. This strategy fosters curiosity, critical thinking, and independent learning in analytical skills.

Interactive Lectures with Technology: Use tools like polling software or online discussion boards to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of analytical skills in real-time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of analytical skills in research and problem-solving. Ask each group to become an expert in their assigned aspect and then reassemble the groups to share their knowledge. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of analytical skills.

Peer Instruction: Incorporate peer-to-peer teaching and learning in analytical skills. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require analytical skills. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a research project or problem-solving project that requires the application of analytical skills. Ask them to develop a research proposal or problem-solving plan, including data collection methods, analysis techniques, and interpretation strategies. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying analytical skills in research and problem-solving. For example, simulate a research team meeting where students analyze data and decide based on their findings. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of analytical skills.

Service Learning: Engage students in service-learning projects that require the application of analytical skills. Encourage students to apply their knowledge and skills to address current research or problem-solving needs in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience applying analytical skills. For example, simulate a research or problem-solving scenario in which students analyze data and decide based on their findings. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Use a dialogue-based approach to teaching analytical skills. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different analytical techniques and tools. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to analytical skills in research and problem-solving and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on analytical skills.

Behavioral Competency 4: Business Acumen is defined as basic concepts of budgeting, how to read and understand financial statements, understanding key financial performance indicators, and conducting cost-benefit analyses. It also involves understanding how businesses and systems operate to support the development of business cases for products, staffing, or other resources to prevent infections.

Learning Objectives: Business Acumen – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of business acumen in the context of budgeting, financial statements, financial performance indicators, and cost-benefit analysis.
- Identify the importance of business understanding in medical professionals' decision-making and resource allocation.
- Explain the basic principles and concepts of budgeting, financial statements, financial performance indicators, and cost-benefit analysis.

2. Comprehension:

- Summarize the key principles and components of budgeting, financial statements, financial performance indicators, and cost-benefit analysis.
- Compare and contrast different approaches to budgeting and financial analysis.
- Interpret the impact of business acumen on healthcare organizations' financial health and sustainability.

3. Application:

- Apply the principles of budgeting, financial statements, financial performance indicators, and cost-benefit analysis to real-life scenarios in healthcare settings.
- Analyze the effectiveness of different business acumen strategies in decision-making and resource allocation.
- Develop strategies to enhance business acumen in medical professionals' practices.

Learning Objectives: Business Acumen – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing healthcare budgeting and financial analysis approaches.
- Assess the impact of business acumen on healthcare organizations' financial performance and sustainability.
- Analyze the ethical considerations of financial understanding in medical professionals' decision-making.

2. Synthesis:

- Propose improvements to existing budgeting and financial analysis approaches in healthcare settings.
- Design a comprehensive budgeting and financial analysis program tailored to the specific needs of a healthcare organization.
- Create a plan for implementing and monitoring financial acumen practices in healthcare settings.

3. Evaluation:

- Critically evaluate the effectiveness of budgeting and financial analysis approaches in healthcare organizations.
- Assess the impact of business acumen on healthcare outcomes and resource utilization.
- Justify the importance of ongoing evaluation and refinement of business acumen practices in healthcare.

Learning Objectives: Business Acumen – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of budgeting and financial analysis in healthcare.
- Evaluate the effectiveness of different budgeting and financial analysis models and frameworks.
- Assess the limitations and challenges of implementing advanced business acumen strategies in healthcare organizations.

2. Synthesis:

- Integrate various theoretical perspectives on budgeting and financial analysis to develop a comprehensive framework for healthcare settings.
- Design a research study to investigate the relationship between business acumen and healthcare outcomes.
- Develop innovative strategies to overcome barriers to business acumen in healthcare organizations.

3. Creation:

- Generate a theoretical model incorporating business acumen as a central component of healthcare practices.
- Design and implement a comprehensive business acumen training program for medical professionals.
- Contribute to advancing knowledge in the field by publishing research on the role of business acumen in healthcare.

Instructional Strategies: Business Acumen

Case Studies: Provide students with real-life scenarios or case studies related to budgeting, financial statements, financial performance indicators, and cost-benefit analysis in healthcare settings. Ask them to analyze the business acumen aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of business acumen principles.

Cooperative Learning: Divide students into small groups and assign them different aspects of business acumen. For example, one group can focus on budgeting, another on financial statements, another on financial performance indicators, and another on cost-benefit analysis. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to budgeting and financial analysis. For example, ask students to create and analyze budgets, interpret financial statements, and conduct cost-benefit analyses. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on budgeting, financial statements, financial performance indicators, and cost-benefit analysis for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of business acumen concepts.

Inquiry-Based Learning: Encourage students to explore specific topics related to business acumen through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based interventions. This strategy fosters curiosity, critical thinking, and independent learning in business acumen.

Interactive Lectures with Technology: Use tools like polling software or online discussion boards to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of business acumen in real time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of business acumen. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of business acumen.

Peer Instruction: Incorporate peer-to-peer teaching and learning in business acumen. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of business acumen principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires them to apply business acumen principles. For example, they can be asked to develop a budgeting and financial analysis plan for a healthcare organization or department. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying business acumen principles. For example, simulate a budgeting meeting in which students must make decisions based on financial statements and cost-benefit analyses. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of business acumen.

Service Learning: Engage students in service-learning projects that require business acumen skills to inform evidence-based interventions or policy recommendations. Encourage students to apply their knowledge and skills to address current financial acumen needs in collaboration with healthcare organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students hands-on experience applying business acumen principles. For example, simulate a financial analysis process where students must make decisions based on financial statements and cost-benefit analyses. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Engage students in a dialogue-based approach to teaching business acumen. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different business acumen strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to financial understanding and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on business acumen.

Behavioral Competency 5: Collaboration/Consultation

“Collaboration” is defined as working effectively in groups (i.e., teamwork) to reach shared goals and knowing when to and proactively seeking information from interdisciplinary team members to solve problems.

“Consultation” is defined as a collaborative process where an expert provides specialized knowledge, insights, and advice to address specific challenges, make informed decisions, or increase understanding of a particular topic. This process often involves assessing needs, offering recommendations, and sharing best practices to achieve desired outcomes.

Learning Objectives: Collaboration/Consultation – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of collaboration/consultation in the context of working effectively in teams or groups to reach shared goals.
- Identify the importance of collaboration/consultation in problem-solving and decision-making processes.
- Explain the role of interdisciplinary team members in providing valuable information and insights.

2. Comprehension:

- Summarize the key principles and components of effective collaboration/consultation.
- Compare and contrast different approaches to collaboration/consultation in various settings.
- Interpret the impact of collaboration/consultation on problem-solving outcomes.

3. Application:

- Apply the principles of collaboration/consultation to real-life scenarios in team-based projects or group work.
- Analyze the effectiveness of different collaboration/consultation strategies in reaching shared goals.
- Develop strategies to enhance collaboration/consultation practices in team-based settings.

Learning Objectives: Collaboration/Consultation – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing collaboration/consultation models and frameworks.
- Assess the impact of collaboration/consultation on team dynamics and outcomes.
- Analyze the ethical considerations associated with collaboration/consultation.

2. Synthesis:

- Propose improvements to existing collaboration/consultation approaches in team-based settings.
- Design a comprehensive collaboration/consultation plan tailored to the specific needs of a team or group.
- Create a plan for implementing and monitoring collaboration/consultation practices.

3. Evaluation:

- Critically evaluate the effectiveness of collaboration/consultation in reaching shared goals.
- Assess the impact of collaboration/consultation on team performance and outcomes.
- Justify the importance of ongoing evaluation and refinement of collaboration/consultation practices.

Learning Objectives: Collaboration/Consultation – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of collaboration/consultation in team-based settings.
- Evaluate the effectiveness of different collaboration/consultation models and frameworks.
- Assess the limitations and challenges of implementing advanced collaboration/consultation strategies.

2. Synthesis:

- Integrate various theoretical perspectives on collaboration/consultation to develop a comprehensive framework.
- Design a research study to investigate the relationship between collaboration/consultation and team performance.
- Develop innovative strategies to overcome barriers to collaboration/consultation in team-based settings.

3. Creation:

- Generate a theoretical model incorporating collaboration/consultation as a central component of team-based practices.
- Design and implement a comprehensive collaboration/consultation program for a team or group.

- Contribute to advancing knowledge in the field by publishing research on the role of collaboration/consultation in team-based settings.

Instructional Strategies: Collaboration/Consultation

Case Studies: Provide students with real-life scenarios or case studies related to collaboration/consultation in team-based settings. Ask them to analyze each case's collaboration/consultation aspects and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of collaboration/consultation principles.

Cooperative Learning: Divide students into small groups and assign them different roles within a team or group. Create a scenario where collaboration/consultation is crucial, such as a group project or problem-solving task. Ask students to work together to demonstrate effective collaboration/consultation practices. This strategy promotes teamwork, communication, and problem-solving skills.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to collaboration/consultation. For example, organize group projects or simulations where students work together to reach shared goals. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and interpersonal skills.

Flipped Classroom: Assign pre-recorded lectures or readings on collaboration/consultation for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of collaboration/consultation concepts.

Inquiry-Based Learning: Encourage students to explore specific topics through self-directed inquiry within collaboration/consultation. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based strategies. This strategy fosters curiosity, critical thinking, and independent learning in collaboration/consultation.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' real-time understanding of collaboration/consultation. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of collaboration/consultation. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different aspects of collaboration/consultation.

Peer Instruction: Incorporate peer-to-peer teaching and learning in collaboration/consultation. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of collaboration/consultation principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires the application of collaboration/consultation principles. For example, ask them to design and implement a collaborative project in a team or group setting. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying collaboration/consultation principles. For example, simulate a team meeting in which students must demonstrate effective collaboration/consultation practices. This strategy allows students to develop communication, problem-solving, and decision-making skills in collaboration/consultation.

Service Learning: Engage students in service-learning projects that require collaboration/consultation with community organizations. Encourage students to apply their knowledge and skills to work effectively in teams or groups to reach shared goals. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience applying collaboration/consultation principles. For example, simulate a team-based project in which students make decisions and collaborate virtually. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in collaboration/consultation.

Socratic Method: Engage students in a dialogue-based approach to teaching collaboration/consultation. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to collaboration/consultation and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on collaboration/consultation.

Behavioral Competency 6: Diversity, Equity, and Inclusion is defined as acknowledging and recognizing individual differences and the impact on individual experiences and perspectives. Respecting and welcoming the variety of perspectives these differences can bring to various situations.

Learning Objectives: Diversity, Equity, and Inclusion – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of diversity, equity, and inclusion in the context of acknowledging and recognizing individual differences and their impact on experiences and perspectives.
- Identify the importance of diversity, equity, and inclusion in promoting a welcoming and inclusive environment.
- Explain the basic principles and concepts of diversity, equity, and inclusion in various situations.

2. Comprehension:

- Summarize the key principles and components of diversity, equity, and inclusion.
- Compare and contrast different approaches to promoting diversity, equity, and inclusion.
- Interpret the impact of diversity, equity, and inclusion on individual experiences and perspectives.

3. Application:

- Apply the principles of diversity, equity, and inclusion to real-life scenarios in various settings.
- Analyze the effectiveness of different strategies for promoting diversity, equity, and inclusion.
- Develop strategies to enhance diversity, equity, and inclusion practices in different contexts.

Learning Objectives: Diversity, Equity, and Inclusion – Certificate Level:

1. Analysis:

- Evaluate the effectiveness of different diversity, equity, and inclusion models and frameworks in diverse healthcare contexts.

2. Synthesis:

- Develop comprehensive and integrated approaches to address complex challenges in diversity, equity, and inclusion in healthcare settings, considering cultural diversity and intersectionality.

3. Evaluation:

- Critically evaluate the outcomes and impact of diversity, equity, and inclusion interventions in healthcare settings, considering ethical, cultural, and global perspectives.

Learning Objectives: Diversity, Equity, and Inclusion – Graduate Level:

1. Analysis:

- Evaluate the complex interplay among individual differences, cultural diversity, and social structures influencing equity and inclusion outcomes in healthcare settings.

2. Synthesis:

- Develop innovative approaches and interventions based on diversity, equity, and inclusion principles to address complex challenges in healthcare settings, considering cultural, social, and global perspectives.

3. Evaluation:

- Critically evaluate the effectiveness and sustainability of diversity, equity, and inclusion interventions in healthcare settings, considering ethical, cultural, and global perspectives. Advocate for systemic change and policy reform to advance diversity, equity, and inclusion.

4. Creation:

- Create a comprehensive plan for promoting diversity, equity, and inclusion for local health organization by developing definitions, policies, and activities to promote a positive culture.

Instructional Strategies: Diversity, Equity, and Inclusion

Case Studies: Provide students real-life scenarios or case studies related to diversity, equity, and inclusion. Ask them to analyze the diversity, equity, and inclusion aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of these principles.

Cooperative Learning: Divide students into small groups and assign them different aspects of diversity, equity, and inclusion. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to diversity, equity, and inclusion. For example, organize diversity workshops or cultural immersion activities. This allows students to apply theoretical knowledge in a practical context and develop empathy and intercultural competence.

Flipped Classroom: Assign pre-recorded lectures or readings on diversity, equity, and inclusion for students to review outside of class. Use class time for interactive activities,

such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of diversity, equity, and inclusion concepts.

Inquiry-Based Learning: Encourage students to explore specific diversity, equity, and inclusion topics through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based strategies. This strategy fosters curiosity, critical thinking, and independent learning in diversity, equity, and inclusion.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of diversity, equity, and inclusion in real-time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of diversity, equity, and inclusion. Ask each group to become an expert in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of diversity, equity, and inclusion.

Peer Instruction: Incorporate peer-to-peer teaching and learning in diversity, equity, and inclusion. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of diversity, equity, and inclusion principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires them to apply diversity, equity, and inclusion principles. For example, ask them to design and implement a diversity training program for a workplace or community organization. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying diversity, equity, and inclusion principles. For example, simulate a workplace situation where students must address a diversity-related conflict. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of diversity, equity, and inclusion.

Service Learning: Engage students in service-learning projects that address current diversity, equity, and inclusion challenges. Encourage students to apply their knowledge and skills to promote diversity and inclusion in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students hands-on experience applying diversity, equity, and inclusion principles. For example, simulate a team-based project in which students make decisions about promoting diversity and inclusion. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Engage students in a dialogue-based approach to teaching diversity, equity, and inclusion. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario about diversity, equity, and inclusion and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on diversity, equity, and inclusion.

Behavioral Competency 7: Ethics is defined as ethics and behavioral science, ethical challenges within IPC, and professional codes of conduct (e.g., APIC practice standards).

Learning Objectives: Ethics – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of ethics in the context of infection prevention and control (IPC).
- Identify ethical challenges within IPC.
- Explain the importance of professional codes of conduct, such as the APIC professional practice standards, in guiding ethical behavior in IPC.

2. Comprehension:

- Summarize the key principles and components of ethics and behavioral science in IPC.
- Compare and contrast different ethical challenges within IPC.
- Interpret the impact of professional codes of conduct on ethical decision-making in IPC.

3. Application:

- Apply ethical principles to real-life scenarios in IPC.
- Analyze the effectiveness of ethical decision-making in addressing ethical challenges in IPC.
- Develop strategies to enhance ethical behavior and adherence to professional codes of conduct in IPC practices.

Learning Objectives: Ethics – Certificate Level

1. Analysis:

- Evaluate the complex interplay among individual, organizational, and societal factors influencing ethical behavior in IPC.

2. Synthesis:

- Develop comprehensive approaches to address complex ethical challenges in IPC, incorporating interdisciplinary perspectives and considering cultural diversity.

3. Evaluation:

- Critically evaluate the outcomes and impact of ethical interventions in IPC, considering ethical considerations, cultural diversity, and global perspectives.

Learning Objectives: Ethics – Graduate Level

1. Analysis:

- Evaluate the complex ethical dilemmas and conflicts that arise in IPC and analyze the impact of ethical decision-making on patient safety and healthcare outcomes.

2. Synthesis:

- Develop innovative approaches and interventions based on ethical principles and behavioral science theories to address complex ethical challenges in IPC, considering cultural, social, and global perspectives.

3. Evaluation:

- Critically evaluate the effectiveness and sustainability of ethical interventions in IPC, considering ethical, cultural, and global perspectives. Assess the impact of ethical decision-making on healthcare equity and social justice.

4. Creation:

- Generate innovative ideas and solutions to address complex ethical dilemmas and conflicts in IPC.
- Design guidelines and protocols that consider cultural, social, and global perspectives to address the diverse needs within IPC settings.

Instructional Strategies: Ethics

Case Studies: Provide students with real-life scenarios or case studies related to ethical challenges in IPC. Ask them to analyze the ethical aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of ethical principles in IPC.

Cooperative Learning: Divide students into small groups and assign different ethical challenges within IPC. Ask each group to research and present their findings to the

class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to ethical decision-making in IPC. For example, organize role-play simulations where students must make ethical decisions in IPC scenarios. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on ethics and behavioral science in IPC for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or debates, where students can apply and reinforce their understanding of ethical principles in IPC.

Inquiry-Based Learning: Encourage students to explore specific topics within ethics and behavioral science in IPC through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based recommendations. This strategy fosters curiosity, critical thinking, and independent learning in ethics and IPC.

Interactive Lectures with Technology: Use tools like polling software or online discussion boards to engage students in interactive lectures. In real time, incorporate quizzes, polls, and group discussions to assess students' understanding of ethics and behavioral science in IPC. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of ethics and behavioral science in IPC. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different aspects of ethics in IPC.

Peer Instruction: Incorporate peer-to-peer teaching and learning in ethics and behavioral science in IPC. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic ethical challenges in IPC and ask them to analyze the situation, identify relevant ethical principles, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of ethical principles in IPC.

Project-Based Learning: Assign students to work on a project that requires the application of ethical principles in IPC. For example, ask them to design and implement an ethical decision-making framework for an IPC program. Provide guidance and feedback throughout the project to support students' learning and application of ethical principles.

Role-Play Simulations: Create role-play scenarios where students can practice applying ethical principles in IPC. For example, simulate a meeting where students must make ethical decisions regarding patient confidentiality or resource allocation in IPC. This

strategy allows students to develop communication, empathy, and problem-solving skills in the context of ethical decision-making.

Service Learning: Engage students in service-learning projects that address realistic ethical challenges in IPC. Encourage students to apply their knowledge and skills to develop and implement interventions or policies that promote ethical behavior in IPC. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students hands-on experience applying ethical principles in IPC. For example, simulate a healthcare setting where students must make ethical decisions regarding infection control measures. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Engage students in a dialogue-based approach to teaching ethics and behavioral science in IPC. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate ethical challenges and principles. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to ethics and behavioral science in IPC and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and sharing diverse perspectives on ethics in IPC.

Behavioral Competency 8: Global Perspective/Mindset is defined as an understanding of various cultures and how those cultures relate and interact with each other. The understanding of how situations impact and are impacted by viewpoints and actions from societies around the world.

Learning Objectives: Global Perspective/Mindset – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of global perspective/mindset in the context of understanding various cultures and their interactions.
- Identify the importance of a global perspective/mindset in recognizing the impact of different viewpoints and actions from societies worldwide.
- Explain the basic principles and concepts of cultural diversity and intercultural communication.

2. Comprehension:

- Summarize the key principles and components of a global perspective/mindset.
- Compare and contrast different approaches to understanding and appreciating cultural diversity.

- Interpret the impact of a global perspective/mindset on intercultural communication and global interactions.

3. Application:

- Apply the principles of a global perspective/mindset to real-life scenarios involving interactions with individuals from different cultures.
- Analyze the effectiveness of different strategies for developing a global perspective/mindset.
- Develop strategies to enhance intercultural communication and understanding in various contexts.

Learning Objectives: Global Perspective/Mindset – Certificate Level

1. Analysis:

- Evaluate the complex interplay among cultural diversity, global systems, and global issues, and analyze the impact of cultural interactions on global outcomes in the context of IPC.

2. Synthesis:

- Develop comprehensive and integrated approaches to address complex challenges from a global perspective/mindset, considering cultural diversity, global systems, and social justice in IPC.

3. Evaluation:

- Critically evaluate the outcomes and impact of global perspective/mindset interventions, considering ethical considerations, cultural diversity, and global perspectives in IPC.

Learning Objectives: Global Perspective/Mindset – Graduate Level

1. Analysis:

- Evaluate the complex interplay among cultural diversity, global systems, and global issues, and analyze the impact of cultural interactions on global outcomes, sustainability, and social justice in the context of IPC.

2. Synthesis:

- Develop innovative approaches and interventions based on global perspective/mindset principles to address complex challenges in global perspective/mindset, cultural diversity, and global sustainability in IPC.

3. Evaluation:

- Critically evaluate the effectiveness and sustainability of global perspective/mindset interventions, considering ethical, cultural, and global perspectives. Assess the impact of global perspective/mindset efforts on global leadership, sustainable development, and social justice in IPC.

4. Creation:

- Create policies to support the sustainability of global perspective/mindset in IPC. Advocate for policy reform to advance global leadership in relation to IPC. Critically evaluate the impact on global outcomes and propose measures to address any disparities or injustices identified.

Instructional Strategies: Global Perspective/Mindset

Case Studies: Provide students real-life scenarios or case studies involving cross-cultural interactions. Ask them to analyze the cultural aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of a global perspective/mindset.

Cooperative Learning: Divide students into small groups and assign them different cultural perspectives to research and present to the class. Ask each group to share their findings and engage in cross-cultural discussions. Encourage collaboration, communication, and mutual respect among group members to foster the development of a global perspective/mindset.

Experiential Learning: Provide students with hands-on experiences that expose them to different cultures. For example, organize cultural immersion activities or study abroad programs. This allows students to apply theoretical knowledge in a practical context and develop empathy and cultural understanding.

Flipped Classroom: Assign pre-recorded lectures or readings on global perspective/mindset for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of the concepts.

Inquiry-Based Learning: Encourage students to explore specific cultural topics of interest through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop a deeper understanding of cultural diversity. This strategy fosters curiosity, critical thinking, and independent learning in a global perspective/mindset.

Interactive Lectures with Technology: Use tools like polling software or online discussion boards to engage students in interactive lectures. In real time, incorporate quizzes, polls, and group discussions to assess students' understanding of global perspective/mindset. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific cultural aspect or perspective. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different cultural perspectives.

Peer Instruction: Incorporate peer-to-peer teaching and learning in a global perspective/mindset. Divide students into pairs or small groups and ask them to teach their assigned cultural aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of a global perspective/mindset. Ask them to analyze the situation, identify relevant cultural factors, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires them to apply a global perspective/mindset. For example, ask them to design and implement a cultural exchange program or a global awareness campaign. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create scenarios where students can practice applying a global perspective/mindset. For example, simulate a cross-cultural negotiation or a multicultural team meeting. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of a global perspective/mindset.

Service Learning: Engage students in service-learning projects that require interactions with individuals from different cultures. Encourage students to apply their knowledge and skills to address current challenges in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students hands-on experience applying a global perspective/mindset. For example, simulate a global business scenario in which students must navigate cultural differences and make decisions based on a global perspective/mindset. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Engage students in a dialogue-based approach to teaching a global perspective/mindset. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate cultural perspectives. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to a global perspective/mindset and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and sharing diverse perspectives on a global perspective/mindset.

Behavioral Competency 9: Leadership is defined as strategic planning management and leadership roles and responsibilities. Content includes accountability performance measures, developing and evaluating policies, and high-reliability organizations (HRO). Leadership is also the ability to guide, inspire, influence and motivate others toward a shared vision or goal and involves setting direction, building trust, and empowering team members to perform at their best.

Learning Objectives: Leadership – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of leadership in the context of strategic planning, management, and leadership roles and responsibilities.
- Identify the importance of accountability performance measures in leadership.
- Explain the basic principles and concepts of developing and evaluating policies in leadership.
- Describe the characteristics and principles of high-reliability organizations (HRO).

2. Comprehension:

- Summarize the key principles and components of leadership.
- Compare and contrast different approaches to accountability performance measures in leadership.
- Interpret the impact of policy development and evaluation on effective leadership.
- Analyze the characteristics and principles of high-reliability organizations (HRO) in the context of leadership.

3. Application:

- Apply leadership principles to real-life scenarios in strategic planning, management, and leadership roles.
- Analyze the effectiveness of accountability performance measures in promoting effective leadership.
- Develop strategies to enhance policy development and evaluation in leadership practices.
- Identify key characteristics and principles of high-reliability organizations (HRO) and propose their application in leadership.

Learning Objectives: Leadership – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing accountability performance measures in leadership.
- Assess the impact of policy development and evaluation on the effectiveness of leadership.
- Analyze the characteristics and principles of high-reliability organizations (HRO) and their relevance to leadership.

2. Synthesis:

- Propose improvements to existing accountability performance measures in leadership.
- Design a comprehensive policy development and evaluation process tailored to the specific needs of a leadership context.
- Create a plan for implementing and monitoring high-reliability organization (HRO) principles in leadership.

3. Evaluation:

- Critically evaluate the effectiveness of accountability performance measures in promoting effective leadership.
- Assess the impact of policy development and evaluation on leadership outcomes and organizational performance.
- Justify the importance of ongoing evaluation and refinement of high-reliability organization (HRO) principles in leadership.

Learning Objectives: Leadership – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of leadership.
- Evaluate the effectiveness of different accountability performance measures in leadership.
- Assess the limitations and challenges of implementing high-reliability organization (HRO) principles in leadership.

2. Synthesis:

- Integrate various theoretical perspectives on leadership to develop a comprehensive framework.
- Design a research study to investigate the relationship between accountability performance measures and leadership outcomes.
- Develop innovative strategies to overcome barriers to implementing high-reliability organization (HRO) principles in leadership.

3. Creation:

- Generate a theoretical model incorporating leadership as a central component of strategic planning, management, and leadership roles.
- Design and implement a comprehensive leadership program for an organization.
- Contribute to advancing knowledge in the field by publishing research on the role of leadership in high-reliability organizations (HRO).

Instructional Strategies: Leadership

Case Studies: Provide students with real-life scenarios or case studies related to leadership. Ask them to analyze the leadership management aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of leadership principles.

Cooperative Learning: Divide students into small groups and assign them different aspects of leadership. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to leadership. For example, organize simulations or role-plays in which students demonstrate effective leadership skills. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on leadership for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or role-play simulations, where students can apply and reinforce their understanding of leadership concepts.

Inquiry-Based Learning: Encourage students to explore specific topics within leadership through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based interventions. This strategy fosters curiosity, critical thinking, and independent learning in leadership.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of leadership in real time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of leadership. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different aspects of leadership.

Peer Instruction: Incorporate peer-to-peer teaching and learning in leadership. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of leadership principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires them to apply leadership principles. For example, ask them to design and implement a leadership program for an organization. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying leadership principles. For example, simulate a leadership team meeting where students must make decisions and demonstrate effective leadership skills. This strategy allows students to develop communication, problem-solving, and decision-making skills in the context of leadership.

Service Learning: Engage students in service-learning projects that require leadership skills to address current challenges. Encourage students to apply their knowledge and skills to lead and manage projects in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience in applying leadership principles. For example, simulate a leadership challenge in which students make decisions and demonstrate effective leadership skills. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Engage students in a dialogue-based approach to teaching leadership. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to leadership and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and develop a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on leadership.

Behavioral Competency 10: Problem Solving is defined as identifying problems and reviewing related information to develop and evaluate options and implement solutions. Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems.

Learning Objectives: Problem Solving – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of problem-solving in the context of medical professions.
- Identify the importance of problem-solving skills in the healthcare field.
- Explain the basic principles and concepts of problem solving.

2. Comprehension:

- Summarize the key principles and components of effective problem solving.
- Compare and contrast different approaches to problem solving in medical professions.
- Interpret the impact of problem-solving skills on patient outcomes and healthcare delivery.

3. Application:

- Apply problem solving skills to real-life scenarios in medical professions.
- Analyze the patterns and trends of infectious diseases.
- Analyze the effectiveness of different problem-solving strategies in healthcare settings.
- Develop strategies to enhance problem-solving skills in medical professions.

Learning Objectives: Problem Solving – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing problem-solving approaches in medical professions.
- Assess the impact of problem-solving skills on patient safety and healthcare outcomes.
- Analyze the ethical considerations associated with problem solving in medical professions.

2. Synthesis:

- Propose improvements to existing problem-solving approaches in the medical profession.
- Design a comprehensive problem-solving framework tailored to the specific needs of a healthcare organization.
- Create a plan for implementing and monitoring problem solving practices in medical professions.

3. Evaluation:

- Critically evaluate the effectiveness of problem-solving approaches in medical professions.
- Assess the impact of problem-solving skills on healthcare delivery and resource utilization.
- Justify the importance of ongoing evaluation and refinement of problem-solving practices in medical professions.

Learning Objectives: Problem Solving – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of problem solving in medical professions.
- Evaluate the effectiveness of different problem-solving models and frameworks.
- Assess the limitations and challenges of implementing advanced problem-solving strategies in medical professions.

2. Synthesis:

- Integrate various theoretical perspectives on problem solving to develop a comprehensive framework for medical professions.
- Design a research study to investigate the relationship between problem solving skills and healthcare outcomes.
- Develop innovative strategies to overcome barriers to problem solving in medical professions.

3. Creation:

- Generate a theoretical model incorporating problem solving as a central component of medical professions.
- Design and implement a comprehensive problem-solving training program for healthcare professionals.
- Contribute to advancing knowledge in the field by publishing research on the role of problem solving in medical professions.

Instructional Strategies: Problem Solving

Case Studies: Provide students with real-life scenarios or case studies related to problem-solving in medical professions. Ask them to analyze the problem-solving aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of problem-solving principles.

Cooperative Learning: Divide students into small groups and assign them different aspects of problem-solving in medical professions. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of problem-solving skills.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to problem solving in medical professions. For example, organize simulations or role-play exercises where students solve medical cases or make decisions in a healthcare setting. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on problem-solving for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or problem-solving simulations, where students can apply and reinforce their understanding of problem-solving concepts.

Inquiry-Based Learning: Encourage students to explore specific topics related to problem-solving through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based solutions. This strategy fosters curiosity, critical thinking, and independent problem-solving learning.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of problem solving in real time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific aspect of problem-solving in medical professions. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of problem-solving aspects.

Peer Instruction: Incorporate peer-to-peer teaching and learning in problem solving. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of problem-solving skills in medical professions. Ask them to analyze the situation, identify relevant information, and propose evidence-based solutions. Facilitate discussions and provide guidance as needed to support students' learning and application of problem-solving skills.

Project-Based Learning: Assign students to work on a project that requires them to apply problem-solving skills in a medical profession context. For example, ask them to design and implement a quality improvement project or develop a problem-solving protocol for a specific healthcare issue. Provide guidance and feedback throughout the project to support students' learning and application of problem-solving skills.

Role-Play Simulations: Create role-play scenarios where students can practice applying problem-solving skills in medical professions. For example, simulate a patient case where students diagnose and develop a treatment plan. This strategy allows students to develop communication, critical thinking, and decision-making skills in the context of problem-solving.

Service Learning: Engage students in service-learning projects that require problem-solving skills to address current healthcare challenges. Encourage students to apply their knowledge and skills to develop and implement interventions or policies in collaboration with healthcare organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience in applying problem-solving skills in medical professions. For example, simulate a medical emergency in which students make decisions and solve problems in real time. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Engage students in a dialogue-based approach to teaching problem-solving. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different problem-solving strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to problem-solving and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and come up with a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on problem-solving.

Behavioral Competency 11: Relationship Management is defined as building, maintaining, and strengthening positive, productive interactions with others and includes coaching, mentoring, communication, collaboration, and critical thinking. Additional content entails active listening, conflict resolution, communication strategies, emotional intelligence, team dynamics, conflict management, consultation, cognitive bias, negotiation skills and effective decision-making.

Learning Objectives: Relationship Management – Undergraduate Level:

1. Knowledge/Remember:

- Define the concept of relationship management in the context of coaching, mentoring, communication, collaboration, and critical thinking.
- Identify the importance of relationship management in fostering effective teamwork and problem-solving.
- Explain the basic principles and concepts of active listening, communication strategies, emotional intelligence, and team dynamics.

2. Comprehension:

- Summarize the key principles and components of effective relationship management.
- Compare and contrast different communication strategies and their impact on relationship management.
- Interpret the role of emotional intelligence in building and maintaining positive relationships.
- Analyze the dynamics of teamwork and their impact on relationship management.

3. Application:

- Apply relationship management principles to real-life scenarios in coaching, mentoring, communication, collaboration, and critical thinking.
- Analyze the effectiveness of different communication strategies in relationship management.
- Develop strategies to enhance relationship management skills in various contexts.

Learning Objectives: Relationship Management – Certificate Level:

1. Analysis:

- Evaluate the strengths and weaknesses of existing relationship management strategies in coaching, mentoring, communication, collaboration, and critical thinking.
- Assess the impact of communication strategies on relationship dynamics and team performance.
- Analyze the role of emotional intelligence in resolving conflicts and managing cognitive bias.

2. Synthesis:

- Propose improvements to existing relationship management approaches in coaching, mentoring, communication, collaboration, and critical thinking.
- Design a comprehensive communication strategy tailored to the specific needs of a team or organization.
- Create a plan for implementing and monitoring relationship management practices in various contexts.

3. Evaluation:

- Critically evaluate the effectiveness of relationship management strategies in coaching, mentoring, communication, collaboration, and critical thinking.
- Assess the impact of relationship management on team dynamics and decision-making processes.
- Justify the importance of ongoing evaluation and refinement of relationship management practices.

Learning Objectives: Relationship Management – Graduate Level:

1. Evaluation:

- Critically analyze the theoretical foundations of relationship management in coaching, mentoring, communication, collaboration, and critical thinking.
- Evaluate the effectiveness of different relationship management models and frameworks.
- Assess the limitations and challenges of implementing advanced relationship management strategies.

2. Synthesis:

- Integrate various theoretical perspectives on relationship management to develop a comprehensive framework for coaching, mentoring, communication, collaboration, and critical thinking.
- Design a research study to investigate the relationship between relationship management and team performance.
- Develop innovative strategies to overcome barriers to relationship management in various contexts.

3. Creation:

- Generate a theoretical model incorporating relationship management as a central component of coaching, mentoring, communication, collaboration, and critical thinking.
- Design and implement a comprehensive relationship management program for a team or organization.
- Contribute to advancing knowledge in the field by publishing research on the role of relationship management in various contexts.

Instructional Strategies: Relationship Management

Case Studies: Provide students with real-life scenarios or case studies related to relationship management. Ask them to analyze the relationship management aspects of each case and propose appropriate actions. Encourage group discussions and critical thinking to enhance their understanding of relationship management principles.

Cooperative Learning: Divide students into small groups and assign them different aspects of relationship management, such as coaching, communication, or collaboration. Ask each group to research and present their findings to the class. Encourage collaboration, communication, and mutual support among group members to foster the development and application of knowledge.

Experiential Learning: Provide opportunities for students to engage in hands-on experiences related to relationship management. For example, organize role-play simulations where students practice coaching or conflict resolution skills. This allows students to apply theoretical knowledge in a practical context and develop critical thinking and problem-solving skills.

Flipped Classroom: Assign pre-recorded lectures or readings on relationship management for students to review outside of class. Use class time for interactive activities, such as case discussions, group exercises, or problem-solving simulations, where students can apply and reinforce their understanding of relationship management concepts.

Inquiry-Based Learning: Encourage students to explore specific topics within relationship management through self-directed inquiry. Provide resources and guidance for students to conduct their own research, formulate research questions, and develop evidence-based strategies. This strategy fosters curiosity, critical thinking, and independent learning in relationship management.

Interactive Lectures with Technology: Use technology tools, such as polling software or online discussion boards, to engage students in interactive lectures. Incorporate quizzes, polls, and group discussions to assess students' understanding of relationship management in real time. This strategy promotes active learning, participation, and immediate feedback for students.

Jigsaw: Divide students into small groups and assign each group a specific relationship management aspect. Ask each group to become experts in their assigned aspect and then reassemble the groups to share their knowledge with each other. This strategy promotes collaboration, knowledge sharing, and a deeper understanding of different aspects of relationship management.

Peer Instruction: Incorporate peer-to-peer teaching and learning in relationship management. Divide students into pairs or small groups and ask them to teach their assigned aspect to their peers, encouraging active engagement and knowledge sharing. This strategy enhances students' understanding and retention of the concepts.

Problem-Based Learning: Present students with realistic problems or case scenarios that require the application of relationship management principles. Ask them to analyze the situation, identify relevant strategies, and propose evidence-based solutions. Facilitate discussions and guide as needed to support students' learning and application of the concepts.

Project-Based Learning: Assign students to work on a project that requires the application of relationship management principles. For example, ask them to design and implement a coaching or mentoring program for a specific organization. Provide guidance and feedback throughout the project to support students' learning and application of the concepts.

Role-Play Simulations: Create role-play scenarios where students can practice applying relationship management principles. For example, simulate a team meeting in which students must demonstrate effective communication or conflict resolution skills. This strategy allows students to develop interpersonal, problem-solving, and decision-making skills in the context of relationship management.

Service Learning: Engage students in service-learning projects that require relationship management skills to address current challenges in coaching, mentoring, communication, collaboration, and critical thinking. Encourage students to apply their knowledge and skills to make a positive impact in collaboration with community organizations. This strategy promotes civic engagement, critical thinking, and applying theoretical knowledge in a practical context.

Simulation Scenarios: Use simulation technology or virtual environments to provide students with hands-on experience applying relationship management principles. For example, simulate a team-based project in which students must make decisions and manage team dynamics. This strategy allows students to gain practical experience and develop critical thinking and problem-solving skills in a controlled and interactive setting.

Socratic Method: Use a dialogue-based approach to teaching relationship management. Ask open-ended questions to stimulate critical thinking and encourage students to analyze and evaluate different strategies. This strategy promotes active learning, reflection, and a deeper understanding of the concepts.

Think-Pair-Share: Pose a question or scenario related to relationship management and ask students to think individually about possible solutions or approaches. Then, pair students up to discuss their ideas and come up with a joint response. Finally, ask pairs to share their findings with the class. This strategy encourages individual reflection, collaboration, and the sharing of diverse perspectives on relationship management.

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Glossary

A	
AAHC	Accreditation Association for Ambulatory Health Care
AAMI	American Association of Microbiologists, Inc. also Association for the Advancement of Medical Instrumentation
ABX	Antibiotics
ABCS	Active Bacterial Core Surveillance
ABHR	Alcohol-based hand rub
ACA	Affordable Care Act
ACA	Apparent Cause Analysis
ACC	Annual Conference Committee
ACIP	Advisory Committee on Immunization Practices
ACS	American College of Surgeons, or Antimicrobial Complaint Systems (Texas Tech U Health Sciences Center)
ADA	American Diabetes Association, American Dietetic Association, American Dental Association, Americans with Disabilities Act
AFB	Acid fast bacilli
AGNB	Aerobic gram-negative bacilli
AHA	American Hospital Association
AHEHP	Association of Hospital Employee Health Professionals
AHRQ	Agency for Healthcare Research and Quality (federal agency)
AIDS	Acquired Immune Deficiency Syndrome
AJIC	American Journal of Infection Control (published by APIC)
AMA	American Medical Association
AMR	Antimicrobial Resistance
ANA	American Nurses Association
ANCC	American Nurses Credentialing Center
AOA	Healthcare Facilities Accreditation Program of the American Osteopathic Association
AOAC	Association of Official Analytical Chemists

AORN	Association of periOperative Registered Nurses
APHA	American Public Health Association
APIC	Association for Professionals in Infection Control and Epidemiology, Inc.
APU	Annual Payment Update
ASA	American Society of Anesthesiologists
ASAE	American Society of Association Executives
ASC	Ambulatory Surgery Center, or Active surveillance cultures
ASCP	American Society of Clinical Pathology
ASHP	American Society of Health System Pharmacists
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASM	American Society of Microbiologists
ASP	Antibiotic Stewardship Program
ASPAN	American Society of PeriAnesthesia Nurses
ASPR	Assistant Secretary for Preparedness and Response (HHS)
ASTHO	Association of State and Territorial Health Officials
ASTM	American Society for Testing and Materials
AST	Association of Surgical Technologists
ATO	APIC Text Online
ATSDR	Agency for Toxic Substances and Disease Registry
AUR	Antimicrobial Use and Resistance (NHSN module)
B	
BAL	Bronchoalveolar lavage
BBP	Bloodborne pathogen
BMT	Bone-marrow transplant
BPD	Bronchopulmonary dysplasia, condition occurring in long-term ventilated neonates
BSI	Bloodstream infection
BSN	Bachelors of Science in nursing

C	
CACC	California APIC Coordinating Council
CAH	Critical-access hospital
CAMH	Comprehensive Accreditation Manual for Hospitals (published by The Joint Commission)
CAUTI	Catheter-associated Urinary Tract Infection
CBIC	Certification Board of Infection Control
CCE	Center for Clinical Epidemiology
CCU	Coronary Care Unit
CDC	Centers for Disease Control and Prevention
CDI	<i>Clostridioides difficile</i> Infection (<i>C. diff</i>)
CEU	Continuing Education Unit
CfC	Condition for Coverage
CIC	Certification in Infection Prevention and Control
CID	Clinical Infectious Diseases
CIDRAP	Center for Infectious Disease Research and Policy
CLABSI	Central Line-Associated Bloodstream Infection
CLIP	Central Line Insertion Practices
CLR	Chapter Legislative Representative
CMMI	Center for Medicare and Medicaid Innovation (part of CMS)
CMO	Chief medical officer
CMS	Centers for Medicare & Medicaid Services
CMV	Cytomegalovirus
CNO	Chief nursing officer
COI	Conflict of interest
COP	Condition of participation
CR-BSI	Central line-related bloodstream infection
CRE	Carbapenem-resistant <i>Enterobacteriaceae</i>
CSF	Cerebral Spinal Fluid
CSTE	Council of State and Territorial Epidemiologists

CU	Consumer's Union
CUSP	Comprehensive Unit-Based Safety Program at AHRQ
CVIL	Cardiac and Vascular Intervention Laboratory
CY	Calendar year
D	
DEI	Diversity, Equity, and Inclusion
DFA	Direct Fluorescent Antibody
DHQP	Division of Healthcare Quality Promotion (CDC department that oversees infection control and prevention programs)
DHS	Department of Homeland Security
DIC	Disseminated Intravascular Coagulation
DNA	Deoxyribonucleic Acid
DNV	Det Norske Veritas (hospital accreditation organization)
DOD	Department of Defense
DOH	Department of Health (U.S.)
DOL	Department of Labor
DOT	Directly Observed Therapy, Department of Transportation
DRG	Diagnosis related group
E	
eCQM	Electronic Clinical Quality Measures
ED	Emergency Department
EHR	Electronic Health Record
EIA	Enzyme Immunoassay
EIP	Emerging Infections Program at CDC
ELR	Electronic Laboratory Reporting
EMR	Electronic Medical Record
EOC	Environment of Care
EPA	Environmental Protection Agency (federal government)
EP	Electro Physiology
ESBL	Extended Spectrum <i>Beta-lactamase</i>

ESRD	End-Stage Renal Disease
EVD	Ebola virus disease
EVS	Environmental Services
F	
FAPIC	Fellow of the Association for Professionals in Infection Control and Epidemiology
FAQ	Frequently asked question
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FGI	Facility Guidelines Institute
FMEA	Failure Mode and Effects Analysis
FMT	Fecal Microbiota Transplantation (treatment for <i>C. diff</i>)
FSIS	Food Safety and Inspection Services (under the USDA)
FTE	Full-time employee
FY	Fiscal year
G	
GAO	Government Accountability Office (federal government)
GISA	Glycopeptide (vancomycin)-intermediate resistant <i>Staphylococcus aureus</i> (VISA)
GLC	Guidelines Committee (APIC)
GPO	Government Printing Office (federal government)
H	
HAC	Hospital-Acquired Conditions
HAI	Healthcare-Associated Infection
HAV	Hepatitis A Virus
HBV	Hepatitis B Virus
HCP	Healthcare Personnel
HCUP	Healthcare Cost and Utilization Project
HCV	Hepatitis C Virus
HH	Hand Hygiene

HHA	Home Health Agency
HHS	U.S. Department of Health and Human Services (federal government)
HICPAC	Hospital Infection Control Practices Advisory Committee
HIMA	Health Industry Manufacturers Association
HIT	Health Information Technology
HIV	Human immunodeficiency virus
HLD	High-Level Disinfection
HRSA	Health Research Society of America, Health Resources and Services Administration (federal government)
HRO	High-Reliability Organizations
HVAC	Heating, Ventilation, and Air Conditioning
I	
IAHCSMM	International Association of Healthcare Central Service Materiel Management
ICD-10	International Classification of Diseases, 10 th revision
ICHE	Infection Control and Healthcare Epidemiology
ICNA	Infection Control Nurses Association - United Kingdom and Ireland
ICRA	Infection Control Risk Assessment
ICS	Incident Command System
ICU	Intensive Care Unit
IDSA	Infectious Diseases Society of America
ID	Infectious Disease (usually followed by “physician”)
ICP(s)	Infection Control Practitioner(s), Infection Control Professional(s)
IFA	Immunofluorescent antibody
IFIC	International Federation of Infection Control
IHI	Institute for Healthcare Improvement
IIPW	International Infection Prevention Week
IOM	Institute of Medicine
ICP	Infection Control Practitioner
IP	Infection Preventionist

IPAC	Infection Prevention and Control Canada
IPAP	Infection Preventionist Academic Pathway
IPC	Infection prevention and control (programs is implied)
IPCP	Infection prevention and control program (CMS designation for Long-Term Care)
IPPS	Inpatient Prospective Payment System at CMS
IRF	Inpatient Rehabilitation Facility
IQR	Hospital Inpatient Quality Reporting Program
ISO	International Standards Organization
J	
JAMA	Journal of the American Medical Association
JID	Journal of Infectious Diseases
K	
KPC	<i>Klebsiella pneumoniae</i> Carbapenemase
L	
LTC	Long-term care
LTACH	Long-term acute care hospital (CDC terminology for LTCH)
LTCH	Long-term care hospital (CMS terminology)
LOS	Length of Stay
M	
M&M	Morbidity and Mortality
MD	Medical Doctor
MDRO	Multiple drug resistant organisms
MERS-CoV	Middle East Respiratory Syndrome Coronavirus
MHFG	Mental Health Focus Group (APIC)
MIC	Minimum Inhibitory Concentration
MICU	Medical Intensive Care Unit
MMRV	Measles, Mumps, Rubella, and Varicella (vaccine)
MMWR	Morbidity and Mortality Weekly Report (CDC publication)
MPH	Master of Public Health

MPSMS	Medicare Patient Safety Monitoring System
MRSA	Methicillin-resistant <i>Staphylococcus aureus</i> (drug resistant bacteria)
MRSE	Methicillin-resistant <i>Staphylococcus epidermis</i>
MS	Master of Science
MSN	Master of Science in Nursing
MSSA	Methicillin-sensitive <i>Staphylococcus aureus</i>
MT	Medical Technologist (a certified laboratory professional)
MTB	Mycobacterium Tuberculosis Bacteria
MWI	Medical waste incineration
N	
NACCHO	National Association of City and County Health Officials
NAPHAI	National Action Plan to Prevent HAIs: Roadmap to Elimination (program within HHS)
NCAI	National Coalition for Adult Immunization
NCID	National Center for Infectious Diseases
NCEZID	National Center for Emerging and Zoonotic Infectious Diseases (CDC)
NCQA	National Committee on Quality Assurance
NFID	National Foundation for Infectious Diseases
NFSNO	National Federal for Specialty Nursing Organizations
NHSN	National Healthcare Safety Network (replaced NNIS; CDC system for HAI surveillance)
NIAID	National Institute for Allergies and Infectious Diseases
NICU	Neonatal Intensive Care Unit
NIH	National Institutes of Health
NIOSH	National Institute for Occupational Safety and Health
NIMS	National Incident Management System
NOCA	National Organization for Competency Assurance (previously NCHCA)
NQF	National Quality Forum

O	
OASH	Office of the Assistant Secretary for Health (HHS office)
OMB	Office of Management and Budget (federal government)
ONC	Office of the National Coordinator for Health Information Technology
OPIM	Other Potentially Infectious Material
OPPS	Hospital Outpatient Prospective Payment System
OQR	Hospital Outpatient Quality Reporting Program
OR	Operating Room
OSHA	Occupational Safety and Health Administration (agency in the U.S. Department of Labor)
OTA	Office of Technology Assessment
P	
PACCARP	President's Advisory Council on Combatting Antibiotic-Resistant Bacteria
PAPR	Powered air-purifying respirator
PC	Period of communicability
PCAST	President's Council of Advisors on Science and Technology
PCR	Polymerase Chain Reaction
PCRA	Pre-Construction Risk Assessment
PD	Positive Deviance
PGC	Practice Guidance Committee
PI	Primary Investigator or performance improvement
PICU	Pediatric Intensive Care Unit
PNP	Partnership for Patients (CMS)
PPC	Public Policy Committee
PPE	Personal Protective Equipment
PR	Powered respirator (often used with HEPA) or public relations
PSI	Patient Safety Indicator
PSC	Patient Safety Component
PSO	Patient Safety Organization

Q	
QAPI	Quality Assurance and Performance Improvement
QI	Quality Improvement
QIO	Quality Improvement Organization
QIN	Quality Innovation Network
QIP	Quality Incentive Program
R	
RCA	Root Cause Analysis
RN	Registered Nurse (undergraduate degree)
RNA	Ribonucleic Acid
RP	Recommended Practice
S	
SAAR	Standardized Antimicrobial Administration Ratio
SARS	Severe Acquired Respiratory Syndrome
SCIP	Surgical Care Improvement Project
SEIU	Service Employees International Union
SGNA	Society of Gastroenterology Nurses and Associates, Inc.
SHEA	Society for Healthcare Epidemiology of America
SICU	Surgical Intensive Care Unit
SIP	Safe injection practices
SIR	Standardized Infection Ratio
SIS	Surgical Infections Society
SME	Subject matter expert
SNF	Skilled Nursing Facility
SPD	Sterile Processing Department
SSI	Surgical Site Infection
STDs	Sexually transmitted diseases

T	
TAP	Targeted Assessment for Prevention
Tdap	Tetanus, Diphtheria, and Acellular Pertussis (vaccine)
TB	Tuberculosis
TFAH	Trust for America's Health
TJC	The Joint Commission (previously known as JCAHO)
TSS	Toxic Shock Syndrome
TTI	Transfusion transmitted infection
U	
UP-Broad	Universal precautions-Broad
USDA	U.S. Department of Agriculture
USP	United States Pharmacopeia
UTI	Urinary Tract Infection
UV	Ultraviolet
UVGI	Ultraviolet Germicidal Irradiation
V	
VAE	Ventilator-Associated Events
VAP	Ventilator-associated pneumonia
VBP	Value-based Purchasing
VHF	Viral hemorrhagic fevers
VRE	Vancomycin resistant <i>enterococci</i> (drug resistant bacteria)
VRSA	Vancomycin Resistant <i>Staphylococcus aureus</i>
W	
WHO	World Health Organization

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